Technology Review

Edited at the Massachusetts Institute of Technology

April, 1965

High Energy Physics

technology
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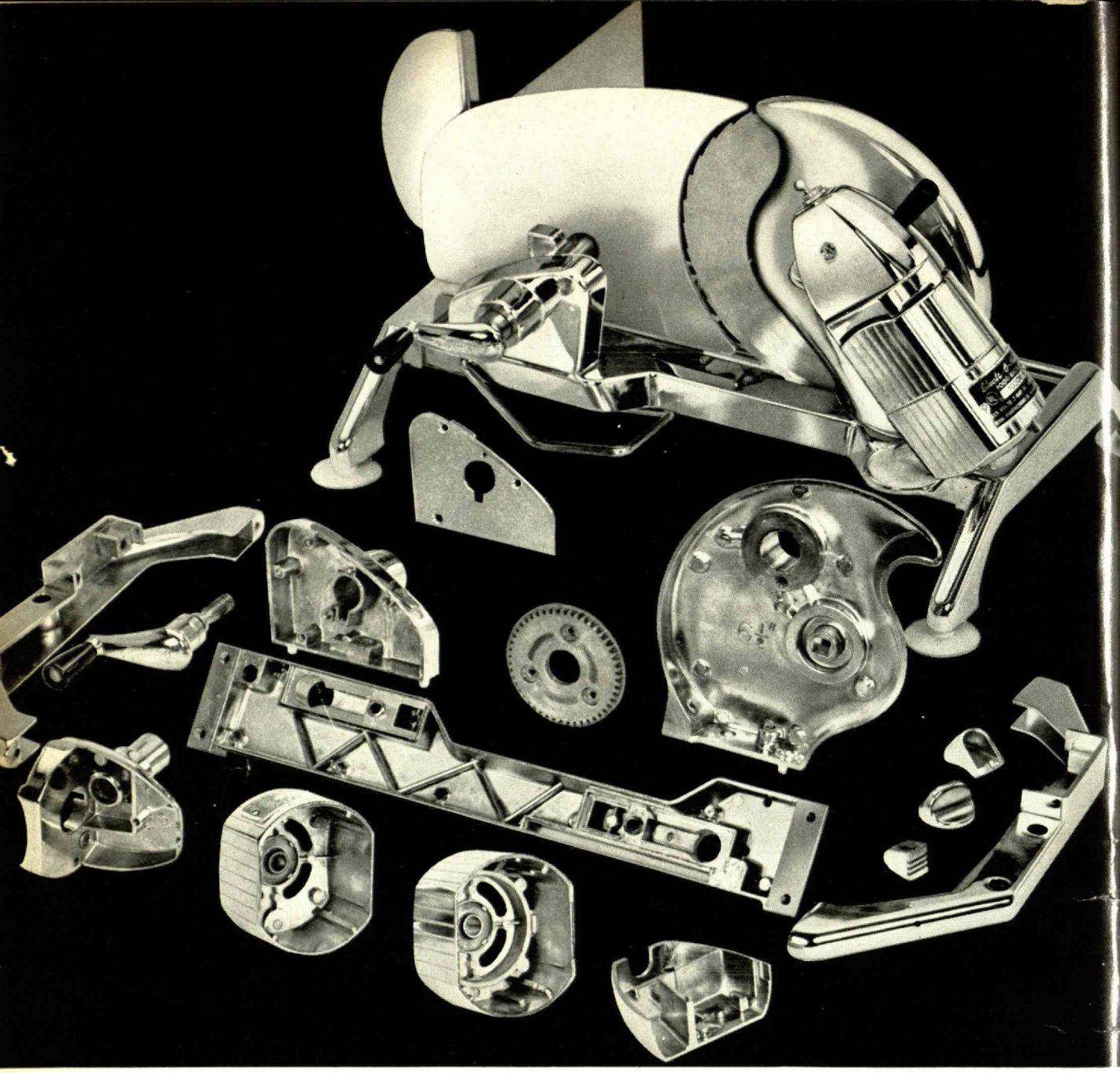

Rival Protect-O-Matic® electric home food slicer, model 1030V

How to make a better profit ...and a better product, too!

By using zinc die castings for 15 of the 20 major parts, Rival Manufacturing Company cuts costs and makes a better food slicer at the same time. Rival, a user of Asarco Special High Grade zinc, tells why zinc die castings are preferred —

1. For better stability. "A food slicer made with zinc die cast parts is heavier, has better stability than one made with a lighter metal. And consumers associate 'heft' with high quality."

2. Parts are tougher. Rival notes that "Many designers and manufacturers are overlooking this fact: zinc die castings have come a long way since the early days. Today, they're tougher and resist impact better than many other die cast alloys."

3. It's easy to cast complex parts. Zinc is easily and quickly die cast into complex shapes that are dimensionally accurate and smooth and this means little, if any machining.

4. And it's easy to plate zinc die castings. Rival points to this key advantage: "Because the as-cast surfaces are exceptionally smooth, we have no problem in plating the parts with a brilliant chromium finish."

As Rival notes, "Zinc die castings have come a long way since the early days." You can get the best by using zinc alloys made with Asarco Special High Grade Zinc, 99.99+% pure.

Asarco's staff of field and research metallurgists are ready to help you use zinc die castings to your best advantage. Write to: American Smelting and Refining Company, 120 Broadway, New York, New York 10005.

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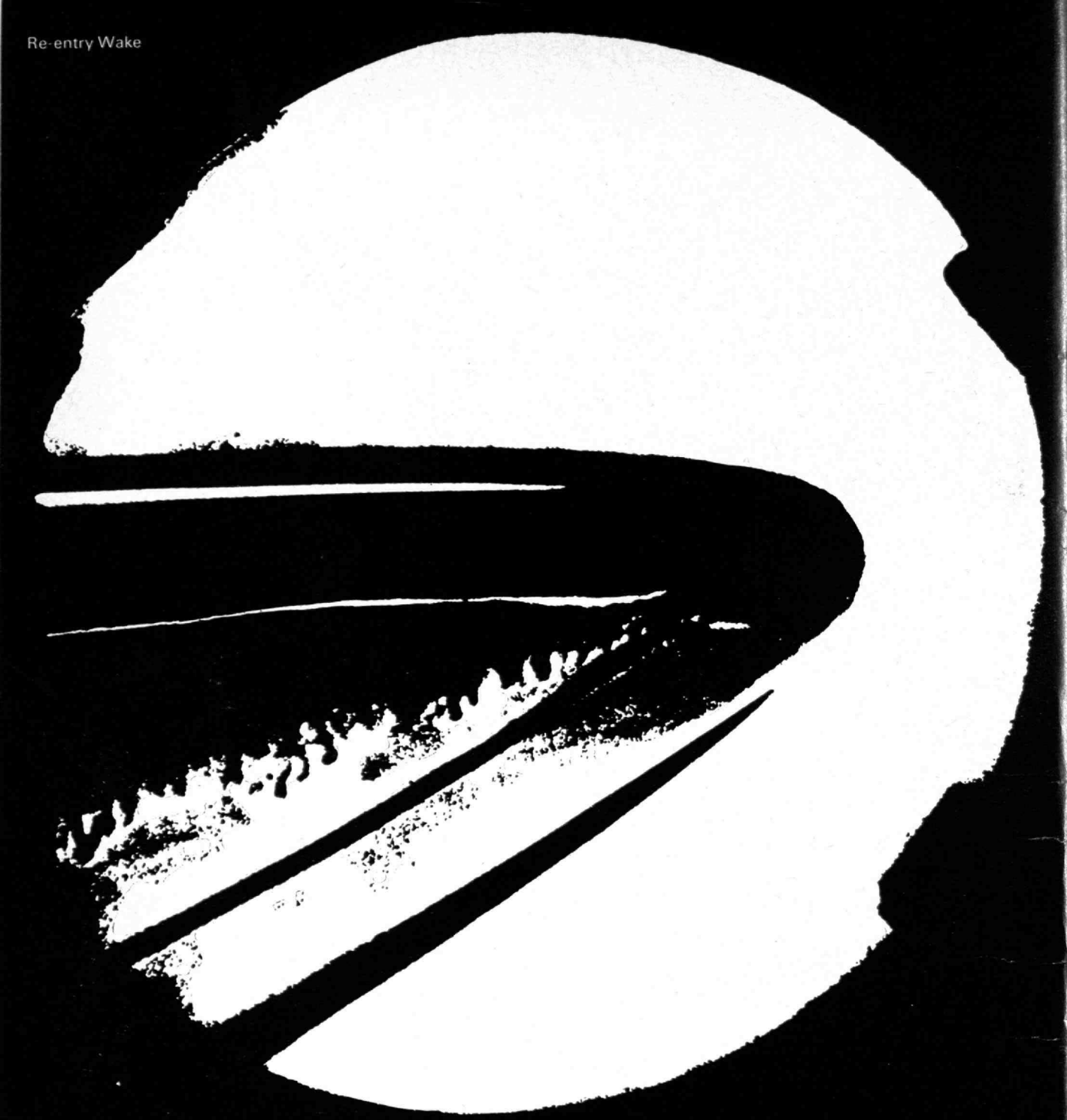

Lincoln Laboratory of the Massachusetts Institute of Technology conducts a program of general research in selected areas of advanced electronics with emphasis on applications to national defense and space exploration. The program in *Re-entry Physics* consists of theoretical and experimental investigations of the electromagnetic effects associated with the passage of hypervelocity objects through the atmosphere. All qualified applicants will receive consideration for employment without regard to race, creed, color or national origin. Lincoln Laboratory, Massachusetts Institute of Technology, Box 28, Lexington 73, Massachusetts.

Solid State Physics
Information Processing
Radio Physics and Astronomy
Radar Design
Control Systems
Space Surveillance Techniques
Re-entry Physics
Space Communications

A description of the Laboratory's work will be sent upon request.

Volume 67 Number 6

Technology Review

Reg. U.S. Patent Office

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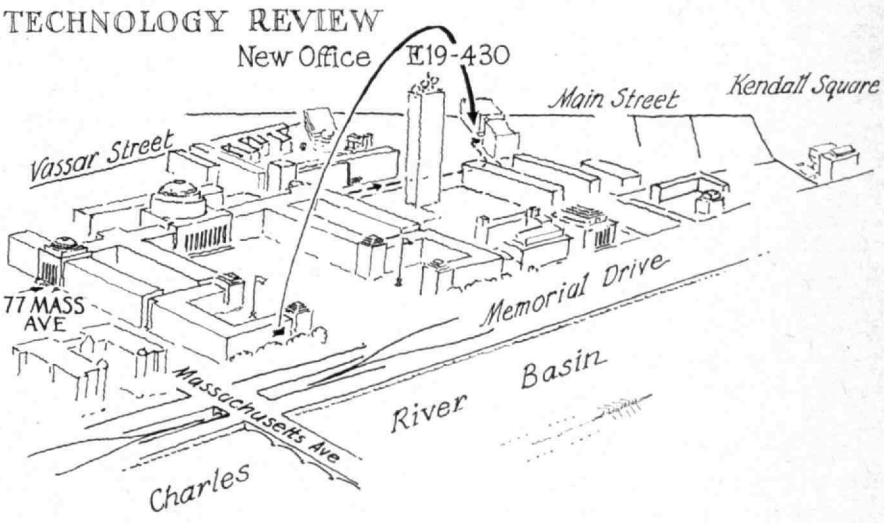
THE COVER photo by Bob Lyon shows students entering the Karl T. Compton Laboratories at M.I.T., a center for much work in basic physics.

3 Physicists on Physics

News of the M.I.T. Community



Technology Review has moved across the campus. Please note new address.

Individuals Noteworthy

An Engineer in Congress

WESTON E. VIVIAN, '49, is reported to be the only member of Congress with a Ph.D. in engineering.

Dr. Vivian received a master's degree at M.I.T. and his doctorate at the University of Michigan in Ann Arbor, where he has since held an upper-echelon post in an electronics company called Conductron. He was elected as a Democrat by a narrow margin in a usually Republican Michigan district, and has been assigned to the House Science and Astronautics Committee.

Science magazine, in a two-page profile of Dr. Vivian on February 26, quoted him on the differences between life in industry and in the House of Representatives: "In a company you can see successes and failures day after day—you can't lie down. In Congress, however, your fate at the polls, which is your only measure of success, is only evident from election to election. And the ironical thing is that this fate may be almost unrelated to whether or not you worked hard on the legislative matters of great consequence."

Engineering Fellowships

AS CHAIRMAN of the Committee for Education of the American Institute of Steel Construction, Albert O. Wilson, Jr., '38, has announced that three research fellowships of $2,000 each will be awarded this fall to graduate civil engineering students undertaking projects involving fabricated structural steel. An additional $2,000 will be awarded each year until five fellowships are available.

Coming Events

April 10 will be Open House Day at M.I.T., and Henry Lichstein, '65, promises many notable exhibits.

June 14 will be Alumni Day and Ralph H. Davis, '31, promises an outstanding program about the world we live in.

Visiting Photographer

MINOR WHITE, a photographer represented in many museums, is at M.I.T. this term as a visiting professor of architecture and about 30 students are studying creative photography under his guidance.

Professor White has been on the faculty of the Rochester Institute of Technology since 1955 and editor of *Aperture* since 1952. He was curator of exhibitions and editor of *Image* at George Eastman House in Rochester from 1953 to 1957. He has shown his own work throughout the United States.

His course is intended to increase the students' visual awareness and creative capacity. Darkrooms, studio-classrooms, and a large exhibition space have been provided for them in the Armory.

Honors to Alumni

RECIPIENTS of recent awards and similar distinctions have included:

H. W. McCurdy, '22, Seattle's First Citizen Plaque for 1964 by the Seattle Real Estate Board . . . *C. Stark Draper, '26,* the National Medal of Science by President Johnson . . . *Albert J. Gracia, '28,* an Award for Meritorious Service by the United Community Council of Summit County, Ohio;

Karl A. Gardner, '34, a Memorial Award by the American Society of Mechanical Engineers . . . *Pauline M. Austin, '42,* an Honorary Doctor of Science degree by Wilson College . . . *William H. Auerswald, '46,* a Bronze Medal by the Carnegie Hero Fund Commission of Pittsburgh;

Robert C. Cowen, '49, acceptant for *The Christian Science Monitor* of the Award for Outstanding Services to Meteorology by a Corporation from the American Meteorological Society . . . *James L. Massey, '60,* the Paper Award by the Group on Information Theory of the Institute of Electrical and Electronic Engineers . . . *Vijay J. Shah, '62,* membership and the Bronze Leaders Plaque by the Home Life Insurance Company.

Faculty Notes

PROVOST CHARLES H. TOWNES of M.I.T. is now Vice-president-elect of the American Physical Society. . . . Professor *Samuel C. Collins* has been named to receive the Rumford Award by the American Academy of Arts and Sciences. . . . Professor *Carl F. J. Overhage* is serving on the Scientific Advisory Committee of the American Newspaper Publishers Association. . . . *Sverre Petterssen,* former professor of meteorology at M.I.T., received the American Meteorological Society's Cleveland Abbe Award. . . . Professor *Walle J. H. Nauta* delivered the Adam M. Miller Memorial Lecture at the State University of New York Downstate Medical Center.

Physics Professors

NEWLY appointed assistant professors of physics at M.I.T. this year were:

Thomas A. Belote, who came to M.I.T. in 1962 as an instructor after receiving three degrees from Rice University.

Jacques D. Ducuing, who studied at the Ingenieur Ecole Polytechnique in Paris and received the D.Sc. from the University of Paris.

Gordon P. Garmire, '62, who was graduated from Harvard College before coming to M.I.T. for his doctorate.

Eugene C. Loh, '61, who received his Ph.D. at M.I.T. after being graduated from Virginia Polytechnic Institute.

Rainer Weiss, '55, who received both his S.B. and Ph.D. from M.I.T., and has been a research associate at Princeton for the last two years.

Both Drs. Garmire and Loh have been associated with the Laboratory for Nuclear Science at M.I.T.

TV Journalist

EDWARD G. SHERBURNE, JR., '41, is directing an American Association for the Advancement of Science project to produce a "Science and Engineering Television Journal" for the National Educational Television network. Twenty programs are planned on such topics as air pollution, supersonic air travel, city planning and design, traffic control, and space observatories.

(*Concluded on page 6*)

Who's helping make water come clean again?

The same Union Carbide that helped develop a new stainless steel used in subway cars.

Streams and rivers in many parts of the country were being plagued with foam, partly due to detergents. In some areas foam even came through the faucets . . . because old detergents kept on foaming after they went down the drain.

Now things are changing—the result of ten years' work by detergent manufacturers. We've helped by being the first to come up with new kinds of detergent chemicals that let the suds do their work in the wash and yet allow foam to be broken down quickly after use.

We've been busy improving many things. Our research work on stainless steel helped develop a new grade of steel that has recently been used to reduce the weight and cost of subway cars. We came up with new kinds of corrosion-resistant alloys for use in the chemical industry. And recently we introduced a plastic drinking straw that won't turn soggy.

To keep bringing you these and many other new and improved products, we'll be investing half a billion dollars on new plant construction during the next two years.

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UNION CARBIDE

Individuals Noteworthy

(*Concluded from page 4*)

New Posts

NAMED in the news of promotions, elections, and appointments recently were:

Samuel E. Lunden, '21, and *F. Marion Banks, '22,* respectively, as Presidents, Los Angeles Town Hall, Los Angeles Chamber of Commerce . . . *David W. Skinner, '23,* as a Trustee, Andover Newton Theological School . . . *J. Adalberto Roig, '24,* as President, International Light Tackle Tournament Association;

Samuel S. Auchincloss, '27, as President, AMP Corporation . . . *Charles H. Norris, '31,* as Dean, College of Engineering, University of Washington . . . *Rolf V. Wallin, '32,* as Vice-president—Engineering, Olefins Division, Union Carbide Corporation;

Charles E. Quick, '33, as Chief, Project Coordination Division, General Engineering Department, Detroit Edison Company . . . *Herbert A. Morriss, Jr., '34,* as Head, Deployment and Vulnerability Section, Weapons System Division, Aerospace Corporation . . . *William T. Barker, '35,* as Head, Product Development Section, Technical Specialties Department, Oxford Paper Company;

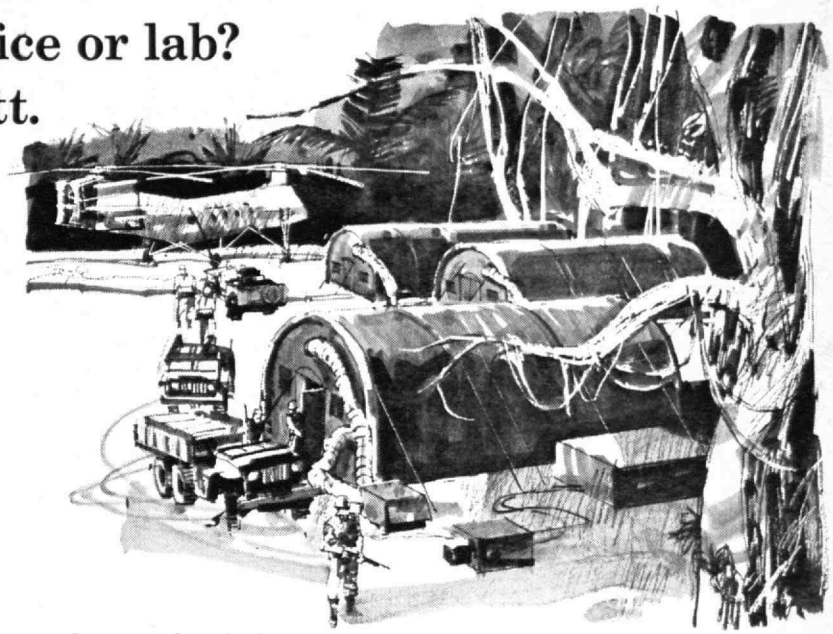
J. Goffe Benson, '35, and *Robert W. King, '42,* respectively, as Executive Vice-president, and as Vice-president and General Manager, Cryogenic Products Department, Linde Division, Union Carbide Corporation . . . *Samuel P. Brown, '35,* as President, American Institute of Consulting Engineers . . . *Dr. Jerome Gross, '39,* as Associate Professor, Harvard Medical School . . . *William G. Osmun, '40,* as Manager, Technical Information Services, Air Transport Association of America;

Robert D. Fletcher, '41, as Councilor, American Meteorological Society . . . *Harold E. Adams, '42,* as Research Scientist, The Firestone Tire and Rubber Company . . . *Albert F. Clear, Jr., '42,* as General Manager, Stanley Hardware, The Stanley Works;

Alfred Goldis, '42, as President, Trimount Clothing Company, Inc. . . . *Irenee du Pont, Jr., '43,* and *Howland A. Larsen, '50,* respectively, as Assistant Director, Employee Relations Department, and as Senior Research Engineer, Plastics Department, Research and Development Division, E. I. du Pont de Nemours and Company . . . *Thomas W. Carmody, '44,* and *Richard W. Eddy, '48,* respectively, as Vice-president—Marketing, and as Vice-president and Business Area General Manager, Chemicals Division, Union Carbide Corporation;

Shepard M. Arkin, '46, as Assistant Director and Manager—Government Marketing, Raytheon Company . . . *Stanley I. Buchin, '52,* and *Victor L. Andrews, Jr., '58,* as Associate Professors of Business Administration, Harvard University . . . *Charles A. Steinberg, '57,* as Manager, Videofile Department, Ampex Corporation.

Want a portable field facility that sets up in 30 minutes and provides all the comforts of a modern office or lab? Just ask Garrett.



When you ask, here are some of the answers you'll get:

Garrett's portable gas turbine power pack and inflatable or expandable shelter give you all the comforts of a completely controlled environment – whether your base is in the middle of the Sahara one week or moved to the Arctic Circle the next.

It works this way:

The power pack provides electricity, refrigeration, air heating, air pressure, and water heating and pumping.

You simply connect water and fuel lines. Start the turbine which inflates and deflates the structures pictured here, or set up the expandable shelter – and you have a modern, well-lighted, temperature-controlled facility – fully protected from sun, wind, rain, snow, ice, heat, humidity, dirt and insects.

You need just five men and half an hour to get the units up and operating.

How do you transport the units?

Easy.

They come packaged in containers that fit nicely on the bed of a truck or in a helicopter sling or in the cargo hold of an airplane.

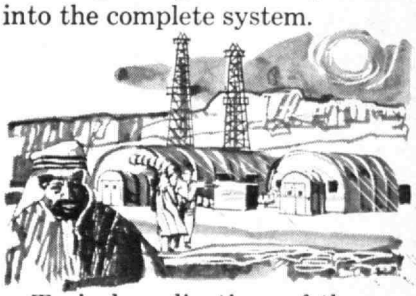
A good example of these new field units is the MUST complex that Garrett-AiResearch is building for the U.S. Army Medical Service. MUST means Medical Unit, Self-contained, Transportable, and comprises a complete 400 bed evacuation hospital.

Outputs from a typical MUST power pack include: 90 kw 400-cycle and 10 kw 60-cycle electrical power, 20 tons of refrigeration, 520,000 BTU/hr. air heating, 60,000 BTU/hr. water heating.

The heart of the power pack is a small gas turbine – the only type of power that can give you so many outputs from a single lightweight unit.

Only Garrett has so much experience in designing and applying small gas turbines to this type of system.

The components are designed and produced by our two AiResearch Manufacturing Divisions and Air Cruisers Division. In addition, we also offer total system management responsibility as well as integrating the components into the complete system.



Typical applications of the new field units are: chemical and biological protection; radar installation, communications bases, civil defense shelters; and oil, mining, and construction operations.

Please direct inquiries to AiResearch Manufacturing Division, Phoenix, Arizona.

Garrett *is* experience

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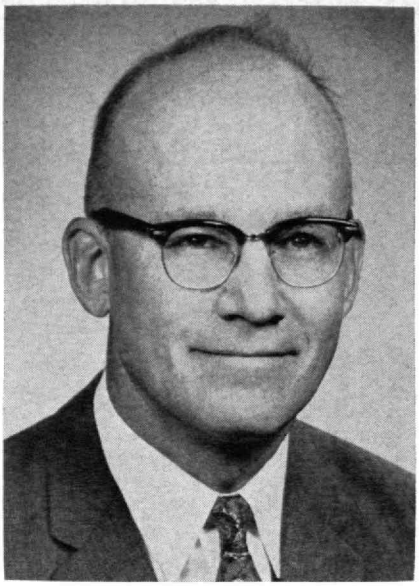
Feedback

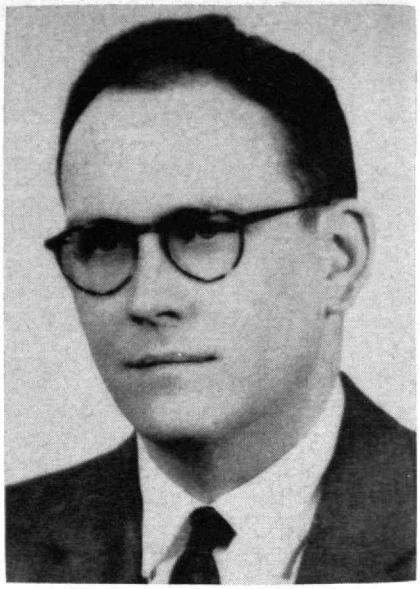
A Business Is Born

AN ARTICLE in Technology Review was directly responsible for bringing two M.I.T. Alumni together in a unique business venture. They have formed "Computer Program Library" to act as agent in advertising and securing leasing agreements for copyrighted computer programs.

The July, 1964, issue of The Review (page 29) explained how John F. Banzhaf, 3d, '62, had persuaded the Copyright Office to reverse its previous position and register copyrights on computer programs. Leon J. Brettler, '48, a Vice-president of Shapiro Bernstein Inc., a publishing company, read this article and invited John to drop in to discuss the development with him. They realized that for the first time the over one billion dollars worth of computer programs produced each year in this country could be legally protected. They also realized that there was a vast untapped source of revenue in the leasing and licensing of copyrighted programs to other computer users. What was needed, they decided, was an organization to act as a bridge between the programer or programing company and other computer users. Computer Program Library will fill this role.

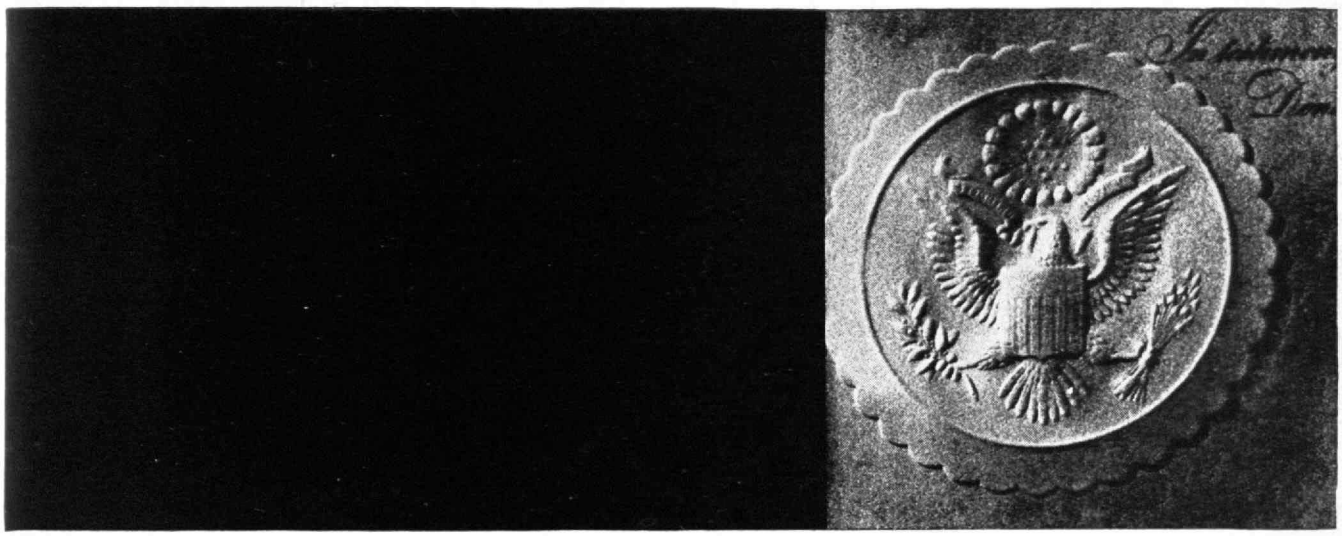
Computer Program Library
509 Fifth Avenue, New York City





NOMINEES to serve on the M.I.T. Alumni Association's Executive Committee next year are Harry E. Essley, '36 (left), and Donald A. Hurter, '46.

Science and IDA



Washington is the decision-making center of the free world. In that center, IDA functions as a scientific adviser to the Department of Defense. Our working environment is the gray area of those major national problems where too little is known and too much is at risk to hazard an intuitive decision. IDA provides responsible DOD decision-makers with the scientific/technical input required to eliminate or lessen the areas of uncertainty.

Physical scientists . . . along with electronic and aeronautical engineers, mathematicians, operations researchers and representatives of many other disciplines . . . have put their minds to work at IDA. In a world in which the complexities and exigencies of our nation's defense and foreign policy continue to increase and grow more critical, IDA's programs must also continue to expand. In short, IDA finds itself in the position of requiring its own new input . . . from the nation's scientific and engineering communities.

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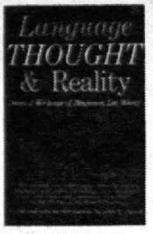

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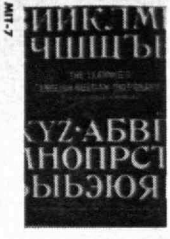

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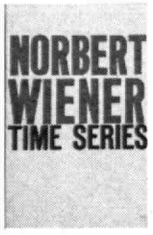

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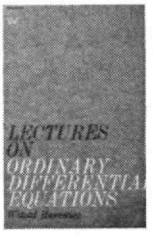

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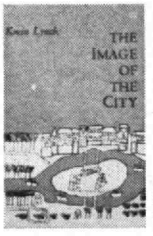

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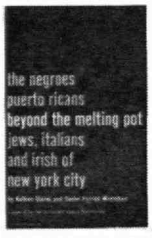

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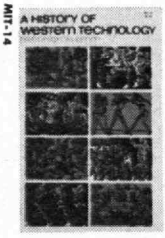

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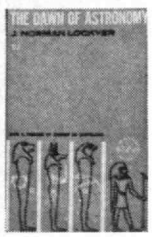

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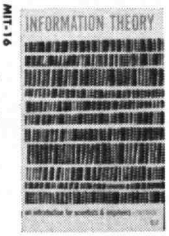

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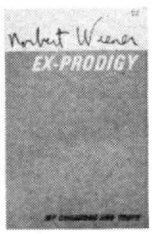

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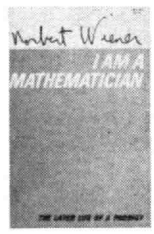

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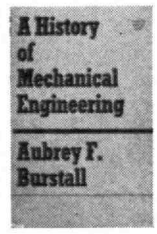

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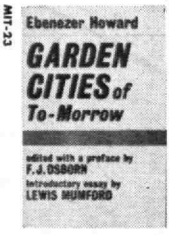

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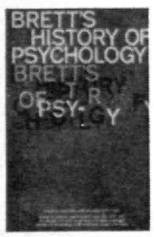

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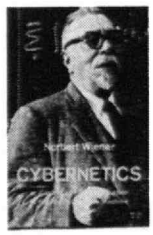

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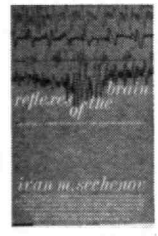

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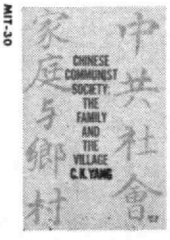

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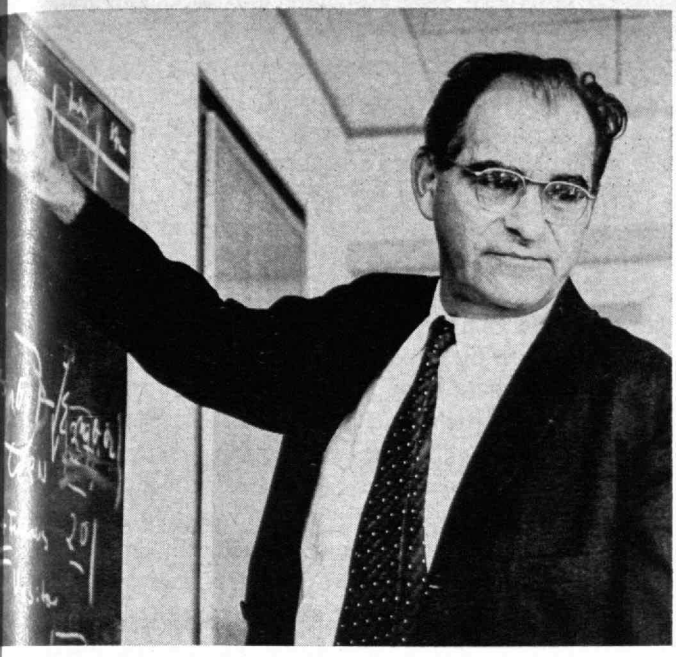

In Defense of High-Energy Physics

The spirit of modern science requires that men try both to explore and to explain the unknown

By Victor F. Weisskopf, Professor of Physics at M.I.T.

TODAY the development of science has arrived at a critical stage. The cost of science in terms of money and manpower has reached a point where society is beginning to question its further uninhibited growth. So far the cost of science has been negligibly small. All basic scientific activity ever undertaken from the times of Archimedes until today amounts, in terms of money expenditure, to less than 10 days' output of the industrial world, an amount below the yearly increase of world production. This represents an impressive rate of return on a capital investment if one considers that almost all industrial production today is a consequence of basic scientific research. Still, it is true that the requirements of modern basic research are beginning to be substantial, and a discussion becomes unavoidable of the importance of basic science and of the relative importance of its different branches. Clearly, the main targets of attack are the most expensive branches which, in addition, have a certain flavor of "uselessness," that is, high-energy physics and astronomy. Modern astronomy, however, has the advantage of being connected with "space"; it therefore profits from the present emphasis on everything related to space science. Clearly, this emphasis is not exclusively based on arguments of scientific merit. High-energy physics, or—as it should better be named—subnuclear physics, no longer enjoys such extraneous support, after having ridden on the coattails of nuclear energy for a number of years.

Looking at the development of science in the Twentieth Century one can distinguish two trends, which I will call "intensive" and "extensive" research, lacking a better terminology. In short: intensive research goes for the fundamental laws, extensive research goes for the explanation of phenomena in terms of known fundamental laws. As always, distinctions of this kind are not unambiguous, but they are clear in most cases. Solid state physics, plasma physics, and perhaps also biology are extensive. High-energy physics and a good part of nuclear physics are intensive. There is always much less intensive research going on than extensive. Once new fundamental laws are discovered, a large and ever-increasing activity begins in order to apply the discoveries to hitherto unexplained phenomena. Thus, there are two dimensions to basic research. The frontier of science extends all along a long line from the newest and most modern intensive research, over the extensive research recently spawned by the intensive research of yesterday, to the broad and well-developed web of extensive research activities based on intensive research of past decades.

One can easily distinguish four important steps of intensive research during this century: electrodynamics and relativity, quantum theory of the atom, nuclear physics, and recently subnuclear physics. The extensive dimensions of electrodynamics, relativity, and quantum theory reach very far today and are constantly expanding. Nuclear physics has already a large extensive part in the detailed studies of nuclear structure and in its astrophysical applications. Subnuclear physics is still mostly intensive in its character. Each part of this scientific frontier is of importance. It would be most danger-

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PROFESSOR WEISSKOPF *(shown above) is now in Geneva serving as Director General of the European Organization for Nuclear Research. He wrote this essay for a Brookhaven National Laboratory booklet entitled* Nature of Matter: Purposes of High-Energy Physics, *edited by Luke C. L. Yuan. It also contains statements by many other noted physicists and may be obtained from the Clearinghouse for Federal Scientific and Technical Information (National Bureau of Standards, U.S. Department of Commerce, Springfield, Va., $1.75).*

ous to neglect some parts relative to others. It is often argued that subnuclear physics should be given less support because this field leads to very little extensive research, because it attracts too large a proportion of clever scientists, and because the cost per scientist is much higher than in many other parts of the scientific frontier. These reasons, however, are inherent in the fact that subnuclear research is at the frontier of intensive research.

Obviously, the most advanced part of intensive research has yet very little bearing upon the understanding of other phenomena, and therefore its extensive component is small. After all, one is at the very beginning of understanding what is going on at the subnuclear frontier itself. Clearly, the same situation existed at earlier periods when other fundamental discoveries were at the frontier of science. Faraday did not know that electricity is the basis of the structure of matter; when the first steps were made towards an understanding of atomic spectra, nobody knew that this would lead to a complete understanding of chemical reactions. Thus the extensive effect of subnuclear physics is not yet visible, but even today it seems already probable that subnuclear phenomena are important for the understanding of the recently discovered galactic explosions.

The frontier of intensive research has always attracted a certain group of very clever scientists. To work in an uncharted field, to discover new laws of nature and completely new types of phenomena, is a great lure for a scientist. One is placed at the spearhead of a great and successful tradition ranging from Galileo, Newton, and Maxwell to Einstein, Bohr, Dirac, and Heisenberg. It is improbable, however, that this field should in fact ever deprive other fields of science of skilled manpower. It is by its very nature a limited field. Competition is heavy; success is rare and depends more often than not on luck and opportunity. Many of the best scientific brains avoid this field because of the narrow choice of activities.

The high cost of subnuclear physics comes from the fact that it deals with new phenomena which were not previously observed. Subnuclear physics requires the study of matter under new conditions. As science progresses, these conditions become increasingly different from normal conditions on earth. Nuclear physics deals with intrastellar conditions, and subnuclear physics submits matter to even more abnormal conditions. Obviously, it is increasingly expensive to create increasingly abnormal environments in a laboratory.

There is today a clear danger that the alleged narrowness and the high cost of subnuclear physics will, in fact, retard its development compared to other fields at the scientific frontier. Already *The Physical Review* shows a stronger increase in the number of solid state physics papers compared to nuclear physics papers. This occurs just at a time when subnuclear physics begins to reveal the existence of a new world of phenomena within the nucleons. We see today the birth of a third spectroscopy compiling the excited quantum states not of atomic systems or of atomic nuclei but of the nucleon itself. We find today the first indications of regularities in these level schemes, which will soon lead to an insight into the structure within the nucleon. This insight is bound to bring us nearer to the understanding of some of the most fundamental unsolved questions. Let us list three groups of such questions:

Today we understand the behavior of matter on the basis of the interaction of atomic nuclei and electrons. But the basic question remains: why is it that the proton, the neutron, and the electron are the elementary particles which make up matter under terrestrial conditions? Why are these particles, together with the light quantum and the neutrino, the most stable forms in a long series of particles including the hyperons, the numerous bosons, and the heavy electrons? These questions concern the basis of everything scientific. As long as they are not answered, the structure of any form of matter remains essentially not understood. The great triumph of quantum theory was the explanation of the characteristic properties of the elements on the basis of the recognition that the field of a given electric charge admits only certain well-defined quantum states of the electron. This idea is fundamental to all atomic physics, chemistry, and molecular biology. However, it is valid only because of the existence of identical electrons and protons with fixed and well-defined charges and masses. In fact, quantum theory does not really explain the existence of characteristic intrinsic properties of each element; it deduces it from another unexplained set of facts: the existence of a small number of elementary particles with their own characteristic intrinsic properties. Hence, the basic problem which underlies all physical sciences, that of the structure of matter, is still unsolved. It is precisely that problem which is attacked by subnuclear physics.

Another fundamental set of questions is connected with the problem of the different types of interaction between material particles. Physics has solved the problem of unifying a large number of interactions, such as electric and magnetic forces, chemical forces, cohesional forces, capillary forces, etc., all of which are reducible to the quantum effects of electric attraction between nuclei and electrons. But there is still no connection seen between nuclear, electromagnetic, gravitational, and weak interactions. Hence, the task of a consistent understanding of nature has only begun and is in need of further development. It is again mainly subnuclear physics which attacks these problems; theoretical research in relativity theory and astronomical research into the structure of the universe will contribute to the solution.

Finally, the same three fields of research are about to tackle the problems of the history of the universe. The question of the origin of matter can already be discussed on scientific grounds. So far, rational ideas are developed only concerning element formation from a gas of protons and electrons. But the problem of the origin of this gas begins to acquire some scientific aspects with the discovery of matter under extreme conditions of

(*Concluded on page 36*)

Basic Physics' Growth at M.I.T.

Students and the government both benefit from efforts to advance the boundaries of knowledge

By Professor Peter Demos, '51

Director of the M.I.T. Laboratory for Nuclear Science

MOST OF the significant discoveries and developments achieved in elementary particle physics during the last 10 years have come from laboratories in the United States. Yet such eminence has not always been ours to claim. American research in basic physics long lagged behind its European progenitor. By the 1920's it began to gather momentum, then moved into the front rank with the arrival of the refugees from totalitarianism in the 1930's, and focused its new strength on applied research in radar, reactor technology, construction of the atomic bomb, operations research, and other specialties in World War II. Today America's research in high-energy physics (that special and precocious offspring of nuclear physics) is among our most exciting efforts in science, and its development —which is interlaced with the history of M.I.T.'s Laboratory for Nuclear Science—is an instructive chronicle of co-operation between government and universities.

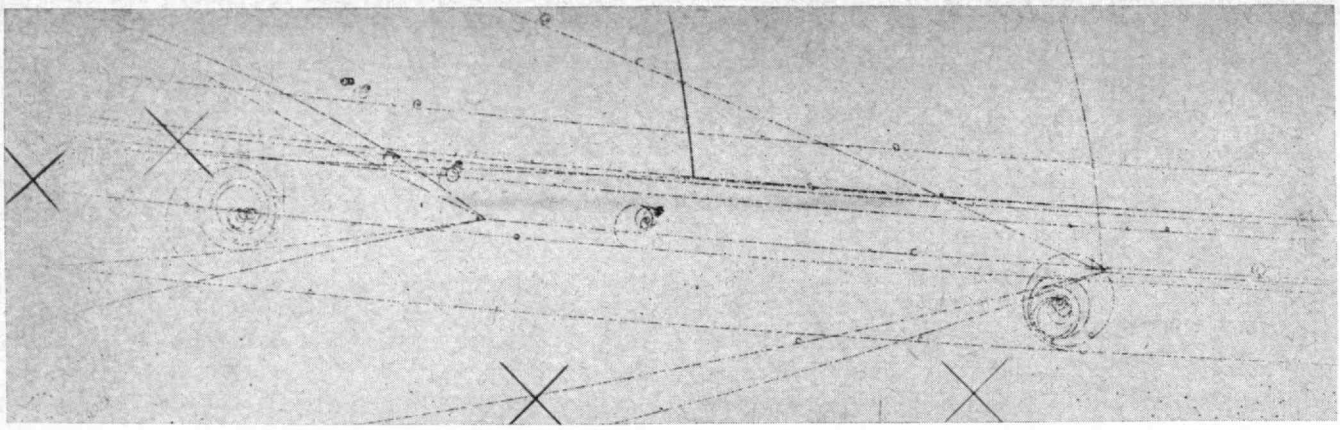
Physicists coming back to their laboratories after the war realized that the level of support that they had previously had for their research was not adequate for their increased numbers, their increased competence, and the increased richness of technical possibilities in an abundant economy. The research work of each physicist was expanding, and the number of university physicists needed for teaching had to increase because of the record number of students who appeared when the G.I. Bill made higher education more widely available.

The missing ingredients in the expansion of scientific education and research were habits of, and the mechanisms for, continued Federal support of basic research. Wartime triumphs of applied physics came from the hands of men whose experience was with basic rather than applied research, and who were therefore in a particularly strong position to make use of a wide range of knowledge. These achievements showed that as a matter of national strength the armed services should take a broad view of their role in supporting basic research. Scientists who had been associated with the large laboratories found the defense agencies, and particularly the Office of Naval Research (ONR), receptive to the task of taking on support of extensive basic research in physics. The stage was set for the expansion of prewar laboratories and for the creation of many new ones.

The universities at or near which the great group researches of World War II had been done were in a particularly strong position to attract established leaders in basic research and to acquire as staff members some of the younger physicists who had undergone an unusually intense apprenticeship in the wartime work. M.I.T. was the site of the Radiation Laboratory, at which radar was developed. Jerrold R. Zacharias was appointed a physics professor at M.I.T. and director of a new Interdepartmental Laboratory for Nuclear Science and Engineering. (Engineering later split off, quite naturally, and became the Department of Nuclear Engineering.) Professors Victor Weisskopf and Bruno Rossi and many younger men were brought from Los Alamos, where they had played prominent roles in the atomic bomb development, to join the distinguished Faculty already at M.I.T. These men knew the great strength of a group effort in research, and particularly the virtues of central facilities and a community of scholars large enough to ensure a rapid interchange of ideas.

What is now the Laboratory for Nuclear Science (LNS) was begun in 1946 under the auspices of the Office of Naval Research with a yearly operational budget of somewhat under one million dollars. Since then its activities have grown to the point where its main operations, now carried under a contract with the Atomic Energy Commission (AEC), involve a yearly expenditure of more than four times this figure, not including the costs of a number of specialized experimental operations under contracts with the Air Force Office of Scientific Research (AFOSR), the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA). The laboratory's facilities are spread about the northeastern part of the campus, in part because the particle accelerators —the Cyclotron, the linear accelerator, the Van de Graaff generators and the Synchrotron—had of historical necessity been housed in different buildings.

As might be expected, the pattern of development of the laboratory has involved cycles in which periods of innovation and fabrication have been followed by extensive application of these to research programs. A good representation of the laboratory's history is obtained by viewing it in terms of two such cycles, the first of which covers roughly the period through about 1958. The second "cycle," now proceeding energetically and with what seems like youthful inexhaustibility, has involved both implementation of the kind of large-scale



In their study of nuclear interactions physicists take vast numbers of bubble chamber photos like the one above and the analysis of these pictures is a huge and growing problem in data reduction. A promising tool for this task is a device called PEPR (Precision Encoding and Pattern Recognition) developed in nuclear science laboratory.

experimental and data analysis facilities that are needed now to do effective work in the field, and the planning and development of new, more powerful accelerator facilities, at M.I.T. and elsewhere, for investigations into the structure of nuclei.

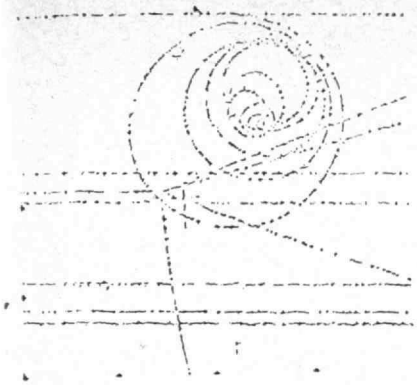
At the time of the laboratory's inception, two particle accelerators were already at M.I.T. They were the Cyclotron built and operated by Professor M. Stanley Livingston (the co-inventor of that pioneer instrument), and an electrostatic accelerator built and operated with Rockefeller Foundation funds by Robert J. Van de Graaff (the inventor of that instrument) and Professor William W. Buechner, '35. During the period from 1946 to 1950 a new and record-high-energy Van de Graaff was built by Professor Buechner in collaboration with Professor John G. Trump, '33, and a major improvement program was started for the Cyclotron. New accelerators also were started. The pioneer linear electron accelerator was built under the supervision of Professors John C. Slater, Arthur F. Kip, and Peter Demos, '51. On it such phenomena as the asymmetry of photofission were discovered. Finally, one of the first of the newly developed electron synchrotrons was built by Professors Ivan A. Getting, '33, J. Earl Thomas, Jr., Joe S. Clark, '37, and Matthew L. Sands, '48. With it the substructures of the proton and the neutron themselves were studied, yielding early results about the nature of their first excited state and their magnetizability.

The research with the laboratory's electrostatic accelerators enriched our knowledge of nuclear energy levels and nuclear dynamics, leading to the discovery, for example, of the electric excitation of nuclei, by Professor Clark Goodman's ['40] group. The improved Cyclotron served as a source of radioactive nuclides for studies of radioactive decay, and these led in turn to the discovery by Professor Martin Deutsch, '37, of positronium, the atom formed by a positron and an electron rotating around each other. The Cyclotron was also an important tool for studies of the physiological effects of radiation, carried out by Professor Evans' group, leading to applications in brain-tumor diagnosis and mine-shaft radiation protection.

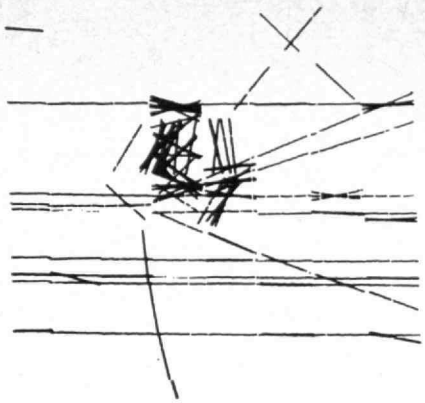
Since there are many interactions between chemistry and nuclear physics, the Laboratory for Nuclear Science has provided important support for three areas of chemical research. The first covers studies of the fission process, nuclear reactions, and decay schemes carried out by Professors Charles D. Coryell and John W. Irvine, Jr., '39. Research on the principles of chemical separations and of analytical processes had been led by Professors David N. Hume and George Scatchard. The third category includes radioactive and stable isotopes, which Professors John D. Roberts, C. Gardner Swain, and Frederick D. Greene, 2d, have used to study the mechanisms of organic reactions in great detail. The laboratory has played nearly as important a part in the research function of the Department of Chemistry as it has in physics, and a stream of very able bachelor's and doctoral students, in addition to post-doctoral and foreign visitors, has had international significance.

By means of airplane and balloon flights, Professor Rossi's group in the early years had mapped out the first quantitative description of the cosmic rays that fall on the earth's atmosphere. That work, under the leadership of Professors Herbert S. Bridge, '50, George W. Clark, '52, William L. Kraushaar, and others, has since developed to the point where almost every important U.S. scientific rocket probe of the planetary system carries one or more pieces of equipment from the Laboratory's Cosmic Ray Group. As with other groups at LNS, there has been strong collaboration with the M.I.T. Lincoln Laboratory and Center for Space Research.

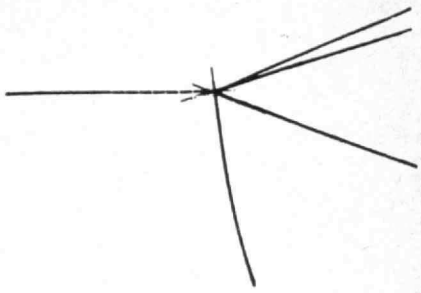
Work on the structure of elementary particles also was begun at M.I.T. in early cosmic-ray studies in which "strange" particles were discovered, and in experiments with the 330-million-electron volt (Mev) Synchrotron (now retired). Such research has grown into one of the largest single branches of physics, and is actively pursued today at M.I.T. by groups under the direction of Professors Deutsch, Bernard T. Feld, Jerome I. Friedman, David H. Frisch, '47, Henry W. Kendall, '55, Louis S. Osborne, '50, Irwin Pless, Lawrence Rosenson, and others—at the Cambridge Electron Accelerator and the Brookhaven National Laboratory.



First, an electron spot performs a "TV scan" (above) around a grid region imposed on the nuclear event seen at left.



A twirling line two millimeters long then scans the same area to determine the angles of tracks made by particles.



Here the tracks are traced out, their vertex located. A human does analysis in 20 minutes, PEPR in a few seconds.

The second cycle of the laboratory's history is perhaps symbolized best by the advent of the larger-scale experiments in high-energy physics performed at off-campus accelerators. The swing to the intensive and elaborate high-energy effort has been paralleled by a somewhat slower but equally strong development of detailed studies of nuclear structure at intermediate levels of excitation. In addition, emphasis in the laboratory's cosmic-ray program has shifted from studies of the elementary particles to an approach in which the properties of the particles as they arrive at the earth's atmosphere are examined in order to ascertain the nature of the universe through which they have passed.

An especially significant landmark is the Cambridge Electron Accelerator, which operates under the joint scientific direction of Harvard and M.I.T. This machine was built under the directorship of Professor Livingston and employs a type of magnetic focusing invented by him and others. M.I.T. groups working at this accelerator are finding new excited states of the nucleons, and are probing the laws of electromagnetism at the smallest distance yet measured, 10^{-14} centimeters. At Brookhaven, physicists from M.I.T. are finding the properties of some of the new particles, an exploration that includes measuring the magnetic moment of a particle that lives only 10^{-10} seconds, using a pulsed magnet of 150 kilogauss built in co-operation with the National Magnet Laboratory at M.I.T.

Along with all this experimental research there has been a vast amount of theoretical investigation of nuclear structure, cosmic rays, quantum electrodynamics, and elementary particle physics, under the leadership of Professors Weisskopf, Herman Feshbach, '42, Arthur K. Kerman, '53, Francis E. Low, Felix M. H. Villars, and others. The beginning of the laboratory was nearly coincidental with the celebrated Lamb-Retherford experiment, which showed a previously undetected difference between certain atomic energy levels and which led to broad new developments in quantum field theory and quantum electrodynamics. Professors Weisskopf and J. Bruce French, '48, were the first to calculate the "Lamb shift" correctly. In connection with the later discovery of the violation of parity, Gerhardt Lüders demonstrated that the so-called TCP theorem holds even when parity is violated. This theorem states that any relativistic theory is invariant when the components of time, charge, and space (parity) are reversed; it is a fundamental consequence of the combination of field theory and relativity and Lüders was one of its discoverers. Perhaps the most important single theoretical work produced by the laboratory was the book, *Theoretical Nuclear Physics,* published in 1952 by Professors Weisskopf and John M. Blatt. This illuminating summary gave direction and unity to the whole enterprise of nuclear physics. Nowadays, the LNS Center for Nuclear Theory represents one of the world's few major efforts devoted to the still unanswered but fundamental questions as to nuclear modes of motion and the forces that bind the nucleus together.

It should be noted, however, that a large modern laboratory performs indirect services at a university that are perhaps just as important as its direct product. A full environment of research activity can provide not only technical help but encouragement and direction to budding research starting on a small scale. The laboratory has provided facilities to a number of diverse disciplines throughout the Institute.

Most important, a full research environment is necessary for teaching in basic science, if that teaching is to be really inspiring. We often tend to employ the words "teaching" and "research" as describing separate functions without understanding that they are in fact indivisible. Teaching that is not rooted in active research in effect becomes a mere recital of dogma, and mediocrity is perpetuated if the teacher himself is unable to put in perspective the continuing distillation and clarification that teaching works on his own concepts. From another point of view, the classroom itself is a program of research for the student, who moves through a succession of steps, each of which is to him a new frontier of knowledge. To guide a venturing intellect, the teacher must be at work at the farthest frontier, where he recognizes himself to be a student.

(*Concluded on page 38*)

From Spider Lines To Atomic Nuclei

The notebooks of two students a century apart mark M.I.T.'s history and advance in physics

THE FIRST CLASSES at M.I.T. met on February 21, 1865. The Faculty addressed a total of 15 students, and President William Barton Rogers, the physics teacher, gave his first lecture at noon to a "very attentive class." During the course of the term, his students considered the smallest things that they were able to measure at that time. As recorded in the notebook of one student, they included "red globules of horse blood" (1/4,000 of an inch), "spider lines" (1/30,000 of an inch), and the dust of puff balls (also 1/30,000).

Today, beginning physics students deal with much smaller and larger measurements. A list from the notebook of Thomas I. Rozsa, Class of 1968, of Forest Hills, N.Y., includes the diameter of an atomic nucleus (10^{-15} meters) and that of our galaxy (10^{21} meters).

The notebooks of both Mr. Rozsa and of Albert F. Hall, of Somerville, who was in President Rogers' first class, were part of an M.I.T. exhibit at the opening last February of Boston's new War Memorial Auditorium. The exhibit focused on physics teaching at the Institute and drew attention to the new freshman physics course developed at the M.I.T. Science Teaching Center (See "A Particulate View of Physics," page 17).

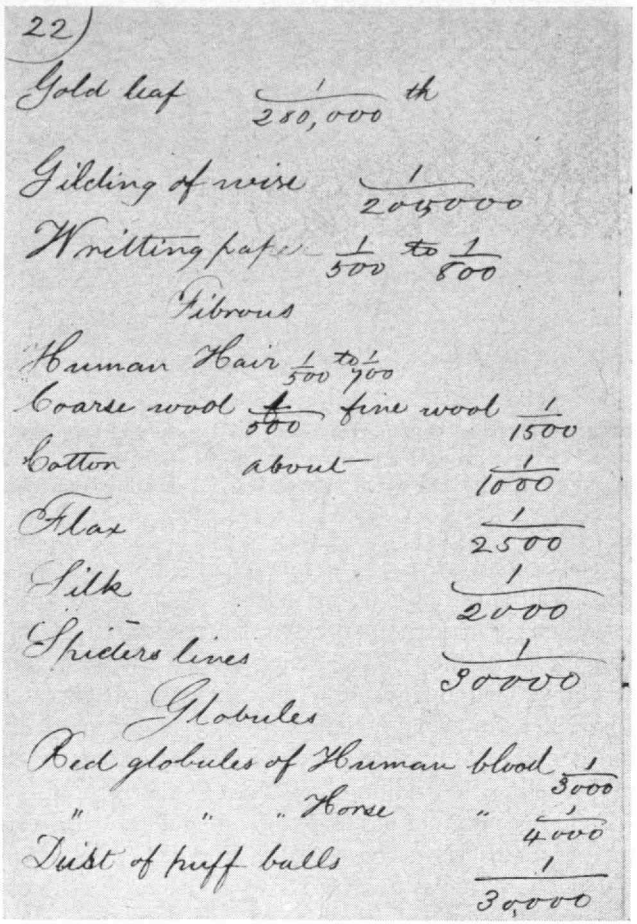
Hall was the first mechanical engineer to be graduated from M.I.T. and later designed water pumping machinery, including the pumps—then the country's largest—in the New York City waterworks.

Another member of the first class was Robert H. Richards, who later became professor of mining engineering and metallurgy. Years afterward he recalled:

"For me it was the beginning of a new life, and in a greater or less measure it was the same for all the students of the first year.

"As a boy in England, I had suffered under the Oxford idea of Latin, Greek, and mathematics of a cut-and-dried order. He who could and would learn by heart to please his teacher was praised. He who wished to know what it was all about, and balked if he failed to receive an answer, was blamed."

Richards came to America at 18 and met "the same old curriculum" at an academy in this country. Three years later he entered M.I.T. There, he said, "in the day's work there was no reproof for the inquiring mind. It was all one continuous question. What is truth?"


22)

Gold leaf 1/280,000 th

Gilding of wire 1/2045000

Writting paper 1/500 to 1/800

Fibrous

Human Hair 1/500 to 1/700

Coarse wool 1/500 fine wool 1/1500

Cotton about 1/1000

Flax 1/2500

Silk 1/2000

Spiders lines 1/30000

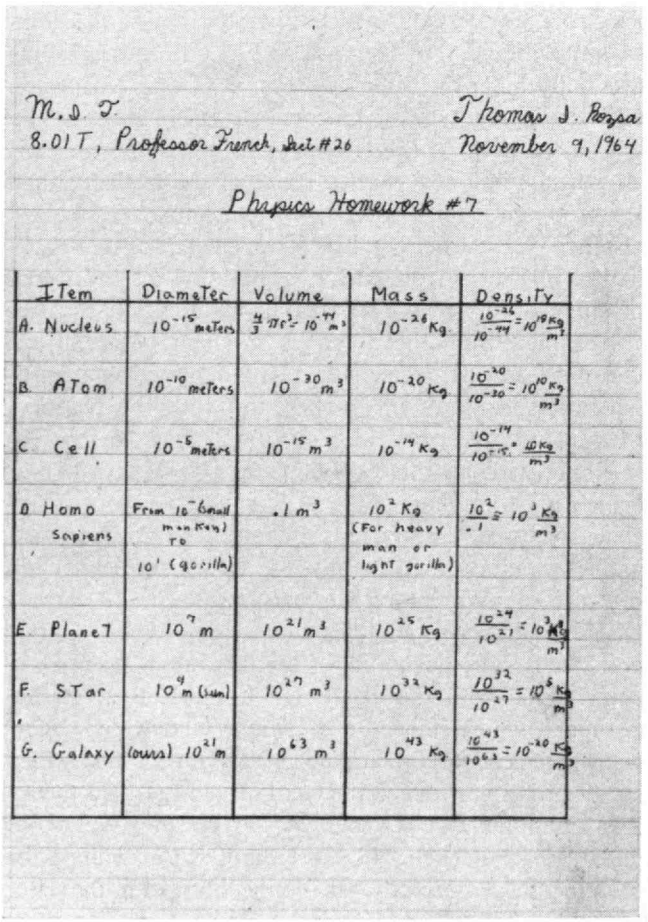
Globules

Red globules of Human blood 1/3000

" " " Horse " 1/4000

Dust of puff balls 1/30,000

What they studied in 1865 (above) and last year (below).


M. I. T.
8.01T, Professor French, Set #26

Thomas I. Rozsa
November 9, 1964

Physics Homework #7

Item	Diameter	Volume	Mass	Density
A. Nucleus	10^{-15} meters	$\frac{4}{3}\pi 5^3 \sim 10^{-44}\ m^3$	10^{-26} Kg	$\frac{10^{-26}}{10^{-44}} = 10^{18}\ \frac{Kg}{m^3}$
B. ATom	10^{-10} meters	$10^{-30}\ m^3$	10^{-20} Kg	$\frac{10^{-20}}{10^{-30}} = 10^{10}\ \frac{Kg}{m^3}$
C. Cell	10^{-5} meters	$10^{-15}\ m^3$	10^{-14} Kg	$\frac{10^{-14}}{10^{-15}} = 10\ \frac{Kg}{m^3}$
D. Homo Sapiens	From 10^{-1} (small man Kg) to 10^{1} (gorilla)	$.1\ m^3$	10^{2} Kg (For heavy man or light gorilla)	$\frac{10^{2}}{.1} = 10^{3}\ \frac{Kg}{m^3}$
E. Planet	$10^{7}\ m$	$10^{21}\ m^3$	10^{25} Kg	$\frac{10^{25}}{10^{21}} = 10^{3}\ \frac{Kg}{m^3}$
F. STar	$10^{9}\ m$ (sun)	$10^{27}\ m^3$	10^{32} Kg	$\frac{10^{32}}{10^{27}} = 10^{5}\ \frac{Kg}{m^3}$
G. Galaxy	(ours) $10^{21}\ m$	$10^{63}\ m^3$	10^{43} Kg	$\frac{10^{43}}{10^{63}} = 10^{-20}\ \frac{Kg}{m^3}$

A Particulate View of Physics

It is a key feature of an introductory course developed at M.I.T. that removes the barriers to contact with our century's great new ideas

By Professor Anthony P. French

WHY IS sulfur yellow? Why is mercury a liquid? Why don't atoms collapse through the attraction of their positive and negative charges? What does it mean to say that a moving clock runs slowly? These are the kinds of questions that we ought to welcome from a college freshman. What can we do to set him on the road toward finding answers to them?

One might suppose that it should be almost axiomatic that a physics course worth its name, even at the elementary level, should contain the really important notions that underlie our description and understanding of nature. As far as physics is concerned, there are two outstanding ideas that the Twentieth Century has contributed and which should surely be introduced at an early stage. These are relativity, and quantum theory. Both are so deeply embedded in our understanding of nature and our ability to describe it that they should occupy a central position in physics teaching. The world is not a classical Newtonian structure to which relativity and quantum behavior are added as an afterthought or as a reward for perseverance after a year or two of grind. Yet, until recently, that is the kind of footing on which relativity and quantum theory have been presented to students at the beginning levels in colleges and universities. Professor Richard P. Feynman, '39, of Caltech observes that students coming out of high school "have heard a lot about how interesting and exciting physics is—the theory of relativity, quantum mechanics, and other modern ideas." He goes on: "By the end of our previous course, many would be discouraged because there were really very few grand, new and modern ideas presented to them. They were made to study inclined planes, electrostatics, and so forth, and after two years it was quite stultifying."

Such remarks should not be taken to imply any disparagement of classical physics which, so long as we do not probe too deeply, provides a wonderful account of much of our physical experience. Newtonian mechanics is obviously relevant to our description of nature, and we know that students need a lot of practice before they are adept with it. But in limiting ourselves to a description of the physical world in such terms, we are preventing ourselves—and our students—from probing into many of the questions that ought to be of supreme interest, because we are condemning ourselves to an acceptance of gross matter as we happen to find it.

PROFESSOR FRENCH is a nuclear physicist who is tempted to take on some research in M.I.T.'s Laboratory for Nuclear Science but who is too busy and interested in his present task of devising better ways to teach science. He was a member of the British mission to the Manhattan Project during World War II and served later as scientific officer at Harwell, Britain's atomic energy establishment. He came to M.I.T. in 1962 after six years as chairman of the physics department at the University of South Carolina. At the Science Teaching Center he has been a leader in M.I.T.'s extensive effort to improve physics teaching, and this article is adapted from a talk he gave last year at a conference at Case Institute. M.I.T. is embarking on a major program to expand the work of the Science Teaching Center, which has begun new co-operative efforts to strengthen teaching also in biology, mathematics, and chemistry.

One of the key features of the approach to physics that we have been developing at M.I.T. is what we have chosen to call "the particulate view." We start from the assumption that a workable, meaningful description of the physical world can be made in terms of particles and their behavior. The question immediately arises—"What is a particle?" Ultimately, perhaps, only the fundamental particles—electrons, nucleons, and so forth—may qualify, but that, from our standpoint, is too restrictive. The dynamics of a star in a galaxy, or of a planet in the solar system, is as much the dynamics of a particle as is the motion of an electron in a cathode-ray tube.

Once we have developed a familiarity with the individual particles and their behavior as described by classical or quantum mechanics (whichever may be the more appropriate) we shall be ready to consider the motions and properties of aggregates of particles and of matter in bulk. One of the advantages that we see as coming out of this kind of approach is a breaking down, at least in part, of the customary barriers and compartments into which the subject of physics is divided.

Thus to take an obvious example, one of the triumphs

of this century in astrophysics has been the emergence of a rather full understanding, through the operation of reactions occurring on the nuclear scale, of how something as large as a star works. To establish a connection between the largest and the smallest in this way is certainly one of the really exciting things in the whole world of intellectual experience. By opening the student's eyes to such relationships one can continually impress on him that the scale of distance of the universe that he lives in has markings over a colossal range—from 10^{-15} meters to 10^{9} light-years—and that to narrow one's attention to familiar terrestrial objects—from grains of sand (10^{-3} meters) to mountains (10^{3} meters)—involves a drastic limitation of our field of interest, however convenient that may be in everyday life.

The Reality of Electrons and Atoms

Our course actually begins with the Millikan experiment for measuring the elementary electric charge. This has several advantages. It leads us at once to a fundamental granularity in nature, it provides us with a universal atomic constant, and it paves the way for a simple discussion of dynamical problems involving charged particles. We then turn at once to electrons. After presenting some of the evidence that electrons are constituents of all kinds of matter, we discuss the motions of electrons of low energies in electric fields. Moreover, we want to lose no time in introducing electronic devices as detectors for various other types of particles and processes. A student need not understand all the niceties of surface phenomena or gas discharges in order to appreciate the use of electron multipliers or Geiger counters as detectors.

Next we consider atoms and molecules. Again the purpose is twofold. We want to give the student a feeling for the reality of atoms—particles with masses and sizes that can be measured in ways that he can readily understand. But we can also push our review of dynamics a little further; we can point to the evidence that individual atoms, just like baseballs, carry momentum and fall under gravity. Then we say something about the measurement of atomic masses, but the student also makes the acquaintance of the velocity-dependent magnetic force. Thus, by a few examples of genuine physical importance, he is introduced to several different types of forces and the motions that they produce. This is not a part of our formal development of dynamics; it makes use of not more than a student might reasonably be expected to have learned in high school.

Our account of atomic particles ends with a brief discussion of nuclei. We consider these as particles having mass, electric charge, certain characteristic numbers of neutrons and protons, and certain rather well-defined sizes. Our purpose is to indicate the scale and the structure of the atomic world, and give the student a feeling for how one can learn about such matters by making suitable observations. Indeed, we have consciously taken as our text what Newton wrote in his preface to the *Principia*: ". . . for the whole burden of philosophy seems to consist in this—from the phenomena of motions to investigate the forces of nature, and then from these forces to demonstrate the other phenomena."

At this point we have thought it appropriate to insert a discussion of "Randomness." Here we develop, explicitly and in some detail, the consequences of having a system made up of a finite number of particles. After introducing some of the elementary ideas of probability, we consider various examples of fluctuation phenomena —such as radioactive counting and Brownian motion.

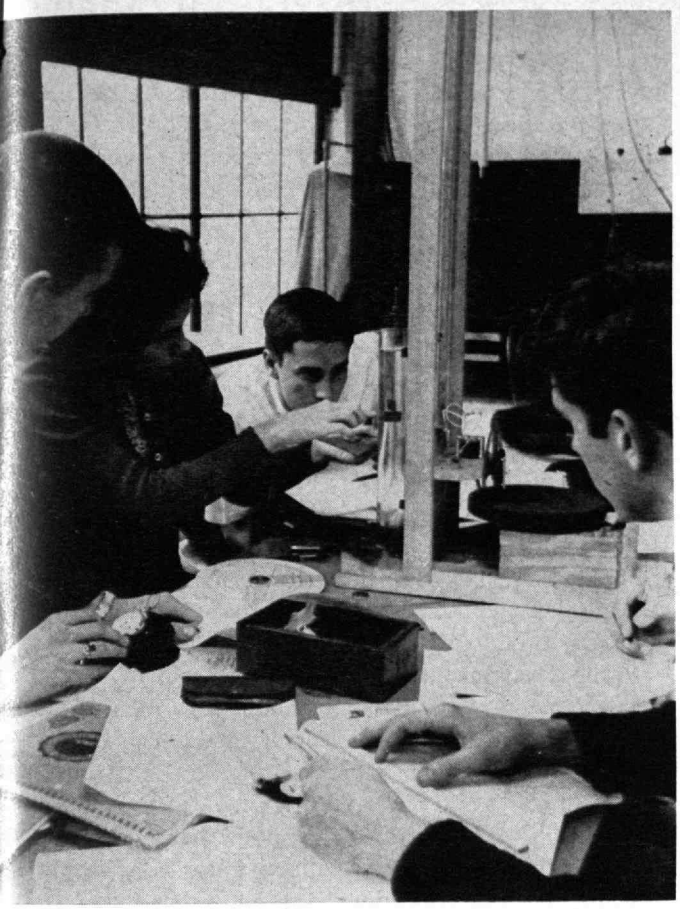
We now return to particles, but of a distinctive kind —photons. After presenting some of the evidence that photons are particles that can be counted, we demonstrate that this goes hand in hand with wave behavior and so we discuss waves and the interference of waves in general. With the help of actual experiments (films) we can show how interference patterns are correlated with the probability for a photon to arrive at a given point on a detector. Thus the essentially statistical nature of atomic phenomena makes its appearance. Having introduced the wave-particle duality for photons, we then point to the existence of this same duality for the particles—electrons, atoms, etc.—whose purely particulate nature we had accepted up to this point.

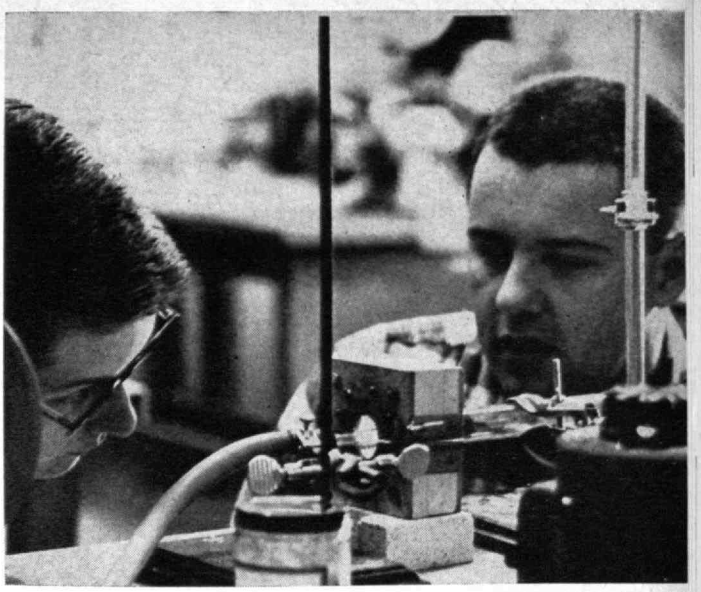
The remainder of this first part of the course consists of a rather brief survey of the larger types of particles, from molecules up to stars. The chief purpose of this is to introduce the scale of magnitudes involved, although the operation of different kinds of forces for different sizes of particles—nuclear forces for nuclei, electric forces for almost everything else, gravitational forces for very large objects—is something to be brought out at this stage.

Steps toward Understanding

Everything that I have described so far falls within one-third of the first semester. Clearly this does not presume to be a complete and careful study of the particles of nature. It is almost an impressionistic approach and it is in many respects the most unconventional part of the enterprise. But it is far from being purely descriptive. The student begins to learn to tackle quantitative problems in dynamics, as well as handling order-of-magnitude calculations and approximations. And of course, as always, the consideration of randomness and probability calls for clear and logical thinking.

In the rest of the first semester, we take up the classical mechanics of particles. We have sought to lay particular emphasis on the conservation laws for momentum and energy, and to solve problems with the help of these concepts, rather than through the direct use of $F=ma$. In this, we are looking ahead to some of those features that will reappear in relativity and quantum mechanics. Emphasis on energy methods is one example of this. Two others are the use of transformations between different frames of reference (pointing toward relativity), and an introduction to perturbation methods





Students at M.I.T. now make their own vacuum tubes with solder glass and thereby can perform experiments such as measuring the electron's charge and the pressure of light.

The "Texas Tower" resonance apparatus, left, is a driven harmonic oscillator for the study of amplitude and phase relationships. The instrument is one of several that the Science Teaching Center has developed for physics teaching.

in simple dynamical problems, with an eye on their future possible use in quantum mechanics.

The third part of our course is devoted to the subject of special relativity. Today, of course, we have access to a wealth of experimental information that did not exist in 1905 when Einstein made his theory. By pointing to some of this evidence—to the existence of a limiting speed for energetic electrons, the dynamical properties of photons, and the large time-dilation effects exhibited by mesons—the need for a non-Newtonian dynamics is made quite clear, but for the systematic development of relativistic mechanics we return to Einstein's postulates and their consequences. We discuss a number of applications of relativistic kinematics and relativistic dynamics including the calculation of threshold energies for the creation of particles in nuclear collisions. We take the formal analysis as far as the transformations of energy, momentum, and force.

Introducing Relativity

There are several good reasons for introducing relativity at this stage, even though we have not yet done with our development of classical mechanics. First, relativity is necessary to provide a correct description of the dynamics of a particle, for in working with electrons we quickly discover that Newtonian mechanics is not enough. Second, the great principles of special relativity —the equivalence of inertial frames and the relativity of simultaneity—are basic tenets of a physicist's creed. Third (perhaps a meretricious reason), the students love it, and if you say the word "relativity" you can be sure of their rapt attention. Fourth, although the ideas are grand and important the mathematics is easy.

The fourth part of our course is concerned with oscillations and waves. As a sequel to our discussion of the harmonic oscillator in Part Two, we now take up all the problems associated with forcing, resonance, and dissipative effects. The analysis is tied primarily to a mechanical system, but the appearance of resonance in all sorts of other physical systems is illustrated. This subject clearly requires the free use of differential equations. Most of our students have not yet had any significant contact with differential equations in mathematics. However, at this stage they have had at least one and one-half semesters' experience with calculus, and are able to recognize reasonable forms of solutions, and verify them by substitution.

In keeping with our description of complicated systems as made up of individual particles, our next step is to consider the problem of coupled oscillators. Once again we are deliberately introducing ideas and approaches that are purely classical, but which will be of value when quantum mechanics is discussed. Then we proceed to the normal modes of a many particle coupled system, and finally to a continuous medium as represented by a string (though, as we point out, not even a string is really continuous, and under sufficient enlargement would appear as a system of coupled particles with spacings of a few angstroms). Our emphasis now shifts to progressive waves. Eventually, by referring back to

the coupled oscillations with a finite number of particles, we can introduce here the distinction between phase and group velocities.

The second year of our course has not yet been formally taught to students, and many of its details remain to be sorted out. The broad picture, at least of our intentions, is however clear. We shall expect to follow a fairly well-beaten path for the first half of the first semester, assembling the facts of electrostatics, magnetostatics, and electric and magnetic induction. This will bring us to a statement of Maxwell's equations. Immediately following this (or perhaps interwoven with it, as appropriate) will be an exposition of electromagnetism from the viewpoint of relativity. Such a treatment brings out in all its glory the interconnection between electric and magnetic fields, and highlights the essentially relativistic character of electromagnetic theory (a feature that Einstein, of course, took as a starting point in 1905).

On to Quantum Mechanics

In the remainder of this third semester we shall go as far as we can in the discussion of electromagnetic radiation. Clearly our selection of topics here must be very limited, and we expect to restrict ourselves to plane-wave solutions of Maxwell's equations. The fourth semester is reserved for an introduction to quantum physics. A presentation of the ideas of quantum mechanics in an elementary yet satisfactory way, during the students' sophomore year, presents a real challenge. Regular discussions of this problem were held throughout the spring semester at M.I.T. last year, and two experimental seminars for sophomores were conducted so as to try out some possible approaches. During 1965 there will be a semiformal presentation of this material.

If time permits (which, we must admit, is unlikely) we should like to end our two-year sequence with some discussions of the properties of bulk matter, on the basis of its being composed of huge numbers of particles. One of the points to be emphasized here would be that the statistical averages for such numbers of particles lead to collective properties such as pressure, temperature, elasticity. It is here, if at all, that we shall be concerned with any kind of presentation of the ideas of thermodynamics. Traditionally, of course, heat and thermodynamics would come hard on the heels of the mechanics during the first year. We have deliberately turned away from this possibility, feeling that the continuum approach to thermodynamics might be appropriately taught (and often, perhaps, better taught) in departments of chemical or mechanical engineering or chemistry.

This, then, is the structure of our course as we envisage it at present although it remains to be seen how much material we can in fact get through during the second year. But a course is much more than just a syllabus, and I should like to convey something of the flavor that we have tried to give to our course, as well as some of our ideas about the teaching of physics.

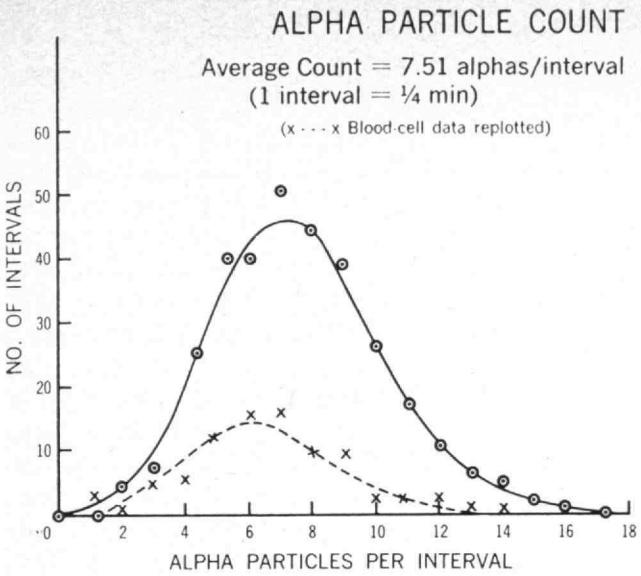
Elementary physics teaching—and indeed undergraduate instruction generally—is altogether too much the slave of the textbook. And textbook instruction has acquired a life and character of its own. Physics as it is presented on the pages of many textbooks often bears surprisingly little resemblance to physics as it is actually practiced. The material is sterilized, abbreviated, and codified so that one loses all sense of the actual process of discovery—the real experiments, the false starts, the inspired guesses, and all that goes into a living, developing science. One of the most valuable things we can do is to put the student in touch with the raw material of the subject—real data and original papers—so that it is not a desiccated scholastic discipline but a human activity in which he is involved at first hand. Every freshman can read and understand the first few pages of Einstein's first paper on relativity. When he has done so, he has not only learned what are the postulates of special relativity, but he has also learned that Einstein's mind is not totally remote from his own.

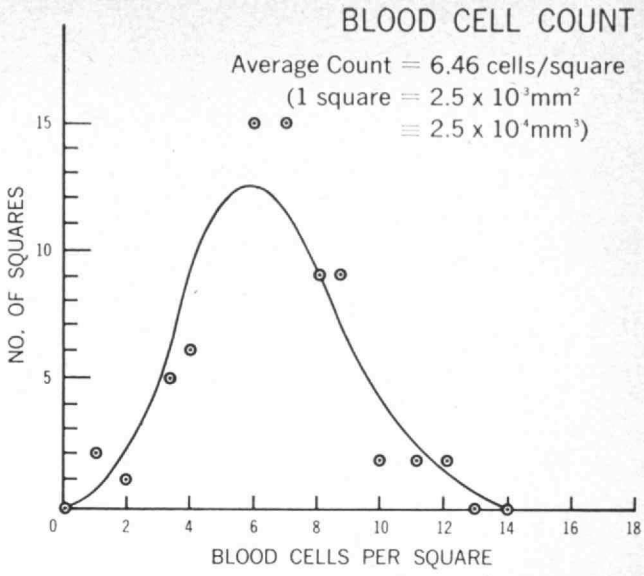
In the development of this new course at M.I.T., we have generated a considerable amount of written material. The basis for the first year of the course, taught during 1964-1965 to the entire class of 1968, is a printed volume of about 500 pages.* But I should like to add a comment in this connection. The notion that a course in science is the study of a single textbook is very deeply embedded in the educational system. I am far from alone in believing that this is a narrow and wrong point of view. The student cannot be blamed if he gets the idea that there is a well-defined and limited set of facts and principles to be learned, and that the textbook is the source of them. We need to break down this monolithic structure and diversify the student's experience. This means that he should read from many sources, and not from just one textbook, that he should do meaningful and relevant experiments in the laboratory, and that his acquaintance with real phenomena should be enriched with the help of demonstrations and films.

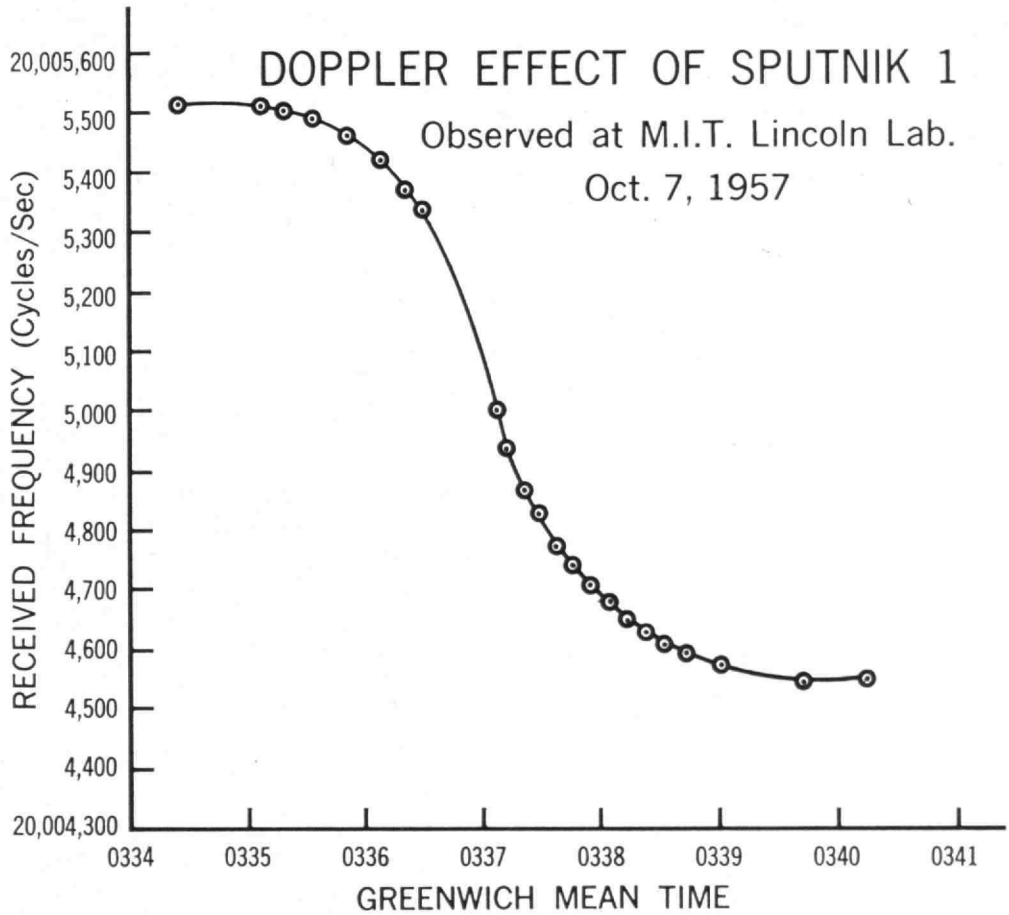
Away from the Orthodox

Every conscientious teacher knows this, and does his best to put it into practice. But the textbook, between hard covers, remains like a millstone around one's neck, making freedom of movement almost impossible. At M.I.T. we do not want to add one more millstone to the stockpile. And what we have in mind is that, instead of just another monolithic text, we should present the various parts of our course as a set of separate monographs, more of them than ever could be covered in a two-year course anywhere. And then it would be open to the individual teacher to make his selection from the list. In this way, I hope, we could get away from anything in the nature of orthodoxy and settled traditions (new style). In other words, what I have tried to describe is *an* introductory course in physics, which will not, I hope, be ossified into *the* introductory course at M.I.T. or anywhere else.

*Published by the M.I.T. Science Teaching Center.







A beginning physics student at M.I.T. sees original data that puts him in touch with the research laboratory. When Rutherford studied the number of alpha particles arriving from a very weak radioactive source, he obtained results shown at top left. A second graph plots the distribution of blood cells on a hemacytometer slide. The same laws of random distributions apply to both studies and a student can make his own analyses of the information. The graph of the Doppler effect shows the received frequency of the radio signal emitted by the first Sputnik and recorded as it passed over the M.I.T. Lincoln Laboratory. From this a student can determine the satellite's altitude and speed.

The Trend of Affairs

Electromagnetic Rubbish

IN ADDITION to polluting air, soil, and water with our increasing rubbish, we now are contaminating many areas with electromagnetic noise. M.I.T. is one of these pockets of pollution and is doing things about it:
► A committee headed by Assistant Professor Robert P. Rafuse, '57, is attempting to trace and see to it that such energy is confined and absorbed on campus, and
► A course in Electromagnetic Compatibility is being prepared to be offered for the first time next August 16 to 27 for engineers, architects, administrators, doctors, and others concerned about it elsewhere.

The sensitivity of the measuring instruments and apparatus used in laboratories, industry, and hospitals is rising, Professor Rafuse points out. So, too, is the man-made noise to which such equipment is vulnerable. Engineers and scientists accustomed to less congested environments are blithely conducting experiments that sabotage their neighbors' efforts. Architects planning beautiful structures and administrators intent on allocating space efficiently have tended too often to ignore this particular disposal challenge.

The shielding, grounding, filtering, and other measures by which electromagnetic pollution can be curbed are costly. But the failures and loss of time that interference can cause may be still more costly—and when electronic equipment and sensitive human nerve tissue are connected (as in the cardiac pacemaker) electromagnetic contamination may be lethal.

At M.I.T., Professor Rafuse reports, even the humanists must be policed because of their increasing use of electric typewriters, computers, etc. Protective measures recommended by his committee include filtering of all fluorescent lights, elevator machinery, and motors with brushes; use of coke-loaded cinder block for all non-load-bearing walls, and grounding of all conduit to the frame at least once in every bay of every steel-frame building.

Serving with Professor Rafuse on this Faculty committee are Delbar P. Keily, '34, Robert M. Rose, '58, Lawrence E. Beckley, '42, and Patrick D. Wall; and to press its program Ralph G. Burgess, '58, has been brought back to the Institute from Lincoln Laboratory as Interference Officer.

In the new summer course next August, illustrative case histories will be presented and Professor Rafuse hopes that some reasonable estimates of the cost versus the effectiveness of various interference suppression programs can be presented. The lecturers will include invited guests in addition to M.I.T. authorities.

Can the Computer Save Boxing?

AFTER SEEING the fight in which Benny Paret was fatally injured, Allen B. Chertoff, '59, suggested that boxing be electronically monitored. He looked into the possibility of using bio-medical transducers and integrated circuitry to keep track of a man's condition throughout a fight. Micro-miniaturized transducers for aerospace applications are now available on a "semi-standard" basis, he found, but developing such hardware and techniques for use in the ring would be a big job.

A boxer's respiratory rate, for example, might be monitored by a transducer in his mouth bit. A higher power transmitter in the heel of his shoe might feed this and other data to a computer. (Metallic laces could serve as antennae.) But existing hardware would have to be adapted or modified for use in the ring and basic equations for the computer programs would have to be derived. Resolving all of the problems, in Mr. Chertoff's opinion, would require an interdisciplinary research effort, and thus far no agency has financially endorsed such a program.

The New York *Times,* nevertheless, reported Mr. Chertoff's thoughts in an article about efforts to save boxing, and suggested the eventual replacement of seasoned fight officials by computers. "Even an honest, competent referee is misled," The *Times* said, "by the sound of punches that are actually bouncing off arms, by a fighter who loses his balance after actually slipping a punch that—seen from a particular angle—seemed to have hit him hard. A computer would not be fooled."

Two weeks later a Sovfoto in The *Times* showed a Russian boxer working out with a device to record his movements, speed, and reaction. "His gloves are equipped with electrical contacts that react on a recorder," the caption said. "The instrument, developed by O. Petunin and V. Burov at the Institute of Physical Culture, eliminates visual observation."

Mr. Chertoff, who is an electronics and aerospace technical consultant in Kendall Park, N.J., saw this picture and observed that once again the Russians seem to have done it before us.

Bright Boys Prefer M.I.T.

A STUDY of the college preferences of more than 120,000 bright high school seniors in 1961, 1962, and 1963 has shown that M.I.T. rated highest among the boys, with Harvard second, and Stanford University highest among the girls, with Radcliffe second.

The National Merit Scholarships Corporation of Evanston, Ill., conducted the study and included in it not only finalists in the national merit searches but also the runners-up who were semifinalists or got letters of commendation for good showings in the competitive examinations. This scholarship-granting organization has spent nearly $21,000,000 now on the education of 9,103 students at 583 U.S. colleges. M.I.T. has granted degrees to or enrolled 421 of them; and Harvard, 667.

The Alumni Body's Constitution

MEMBERS of the M.I.T. Alumni Association are voting this spring on revision of their organization's constitution and bylaws. The changes were recommended by a committee headed by Theodore A. Mangelsdorf, '26, and endorsed on March 1 by the Alumni Council.

The committee has suggested that the constitution:

► State that the Association's object is to "serve the purposes of the Institute" in addition to furthering "its well-being by fostering the interest of the Alumni in the Institute and in each other."

► Include persons in the Association's membership who have been "connected with the Institute at least two full terms for post-graduate pursuits," and eliminate membership classifications no longer considered necessary.

► Provide for a larger Executive Committee than at present, by having four rather than two Vice-presidents, and six rather than four members elected at large, to permit and encourage wider geographical representation on this body.

► Recognize the increase in the number of men having graduate but not bachelor's degrees from M.I.T. by providing for representation of such members on the Alumni Council.

The changes suggested in the bylaws would make them consistent with the revised constitution, enlarge the Alumni Fund Board, and provide for steps to fill vacancies in places on the M.I.T. Corporation that are held by Alumni Term Members. Numerous other small changes in both the constitution and the bylaws also have been recommended; these would clarify some provisions, remove apparent inconsistencies between the constitution and the bylaws, and recognize developments during the quarter of a century since both documents were last revised.

Mr. Mangelsdorf's colleagues on the committee appointed in 1963 to undertake this updating were Marshall B. Dalton, '15, Clarence L. A. Wynd, '27, John J. Wilson, '29, Donald P. Severance, '38, Edward O. Vetter, '42, and Breene M. Kerr, '51. This committee submitted tentative proposals to the Alumni Officers' Conference in Cambridge last September and considered suggestions from Alumni throughout the country before submitting its final recommendations to the Executive Committee and the Alumni Council.

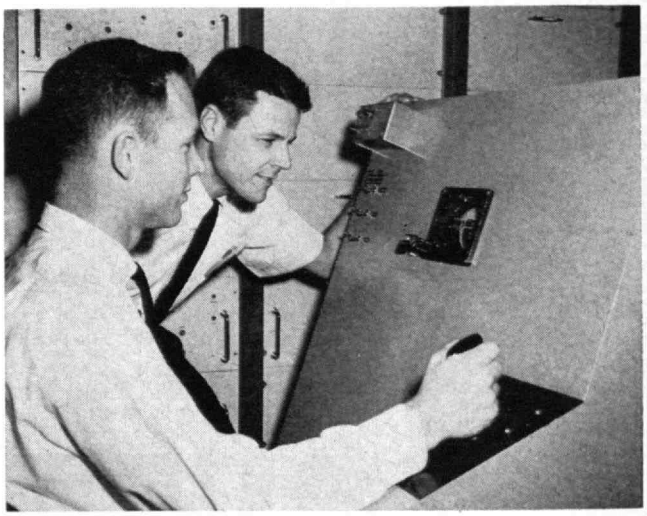
Aboard the First OAO

THE NATIONAL Aeronautics and Space Administration has announced that the nation's first Orbiting Astronomical Observatory, scheduled for launching late this year, will carry an M.I.T. experiment. It is designed to survey the sky to detect high-energy gamma rays that do not originate from earth. This is to be done with a 37-pound instrument that has two detectors, a crystal scintillator, and a Cerenkov counter to determine the direction of incident gamma rays. Professor William L. Kraushaar is the principal investigator.

Preparing for Gemini

DURING the National Aeronautics and Space Administration's Gemini ventures, two astronauts are scheduled to go into orbit, maneuver, and rendezvous with another orbiting rocket called Agena. In the M.I.T. Instrumentation Laboratory, a proposal has been studied to modify the Agena so that it can accept hand-control commands from the men in the Gemini when the two vehicles are coupled in space.

For up to 60 seconds the astronauts are expected to use the Agena's 16,000 pounds of thrust for their maneuvers. All rockets and missiles bend during thrust and when the Gemini and Agena are joined the flexing will be localized at the coupling adaptor. To study the characteristics of this wiggle and give astronauts a chance to try out control systems, a simulator was built at M.I.T. and connected to a computer.



Astronauts Scott (left) and Bassett simulating an adventure.

It consists of a hand-operated control stick and a spherical flight indicator, called the "eight ball," to present the operator with continuous indications of roll, pitch and yaw, and is mounted on a dummy Gemini display and control panel. The computer is programmed with data describing the Gemini and its subsystems, the Agena and its subsystems, the behavior of the tandem unit, and the effects of sloshing fuel in the tanks.

Astronauts can "fly" the Gemini-Agena tandem on the computer through an autopilot, or through an electronic network farther down the control line than the autopilot, or through a direct link to the exhaust nozzles at the aft end of the Agena engine. Two astronauts, David Scott and Charles Bassett, familiarized themselves with the simulator at the laboratory this winter and both were able to fly the Gemini-Agena tandem best when the control stick was tied directly to the Agena engine, bypassing the autopilot and network.

Joseph E. DeLisle, Associate Director of the Instrumentation Laboratory, Benjamin M. Hildebrant, '59, and Sidney J. Sklar, '60, directed development of the simulator under an Air Force contract.

LES and the Titan

LINCOLN LABORATORY people listened intently February 11 to John A. Kessler, '48, describe from a Cape Kennedy press booth the ascent of a Titan III A. It carried a Lincoln Experimental Satellite, ironically called LES—that was the first of a series designed to test new devices, in orbit, that the laboratory is developing for military communication systems.

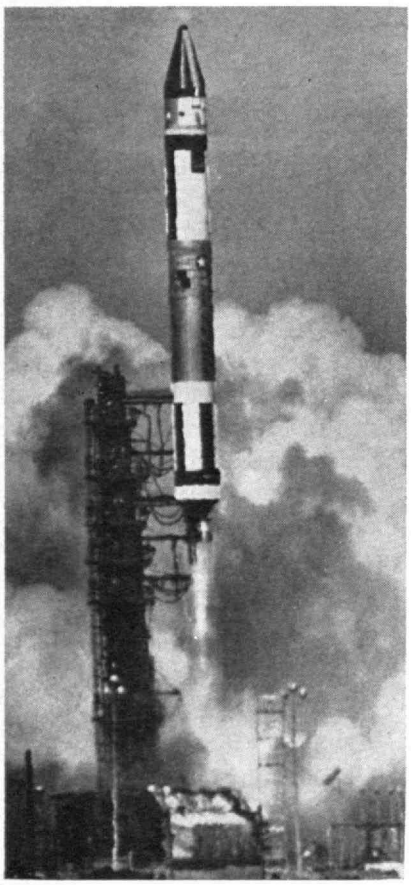
It was the first Titan to carry an active pay load and this was the most intricate flight test to date of this Air Force booster. It was assigned to park itself in a circular orbit at an altitude of 100 nautical miles, then so maneuver over Australia that it would wind up in an orbit 15 times that high. These acrobatics required three separate ignitions and shutdowns with the rocket under inertial guidance four hours and 22 minutes. The Titan performed them without a hitch, which cheered the builders of the LES because future Titans will carry its successors.

The watchers were disappointed, however, when the time came for the LES to be sent into a far higher, elliptical orbit. M.I.T. stations at Pleasanton, Calif., and Westford, Mass., and other radars detected it and two parts of the launching vehicle drifting apart, but the LES remained in the Titan's final 1500-mile-high orbit. This necessitated unwelcome changes in the experiments. The LES promptly began sending back useful data, nevertheless, and voice messages that were sent to it came back with gratifying fidelity.

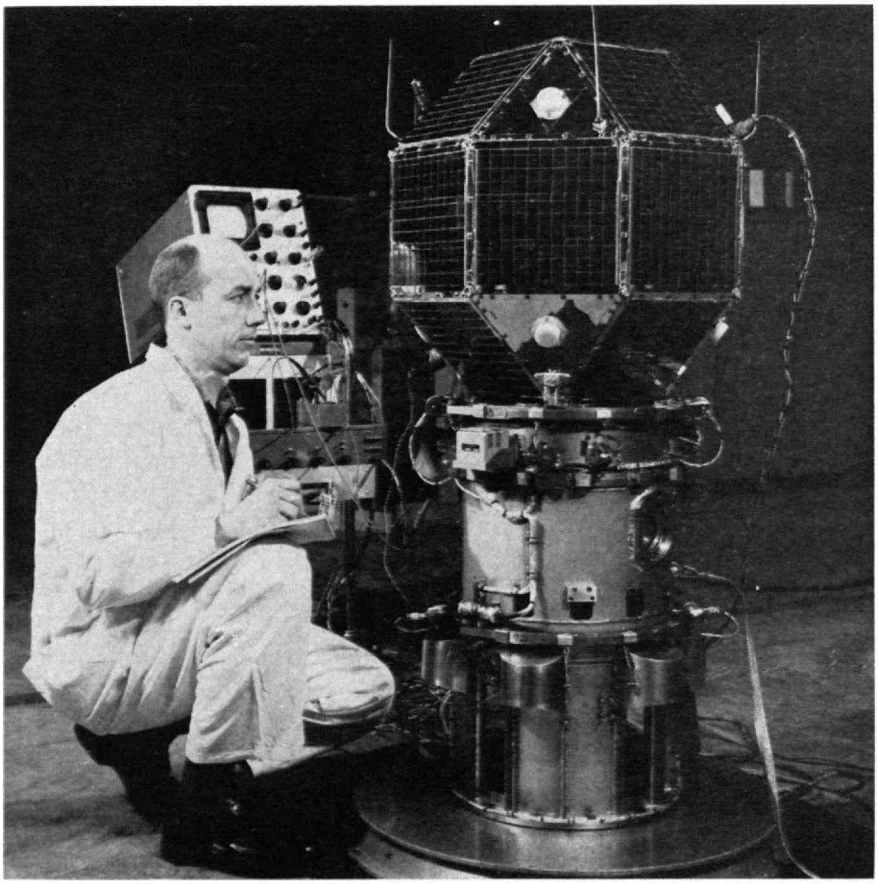
The LES was not designed to rival Telstars, but rather to explore ways of advancing the state of the art of space communications with new devices and techniques. The communications transponder of the LES consists wholly of solid state devices such as transistors and operates at what engineers call "X-band" frequencies, in the vicinity of 8,000 megacycles per second. Solid state transmitters in this frequency range are not as powerful or efficient yet as conventional transmitters, but have been improved in recent years and may be further developed.

The LES is only two feet wide and weighs only about 69 pounds. It was designed and built by the Communications Division headed by Gerald P. Dinneen, with Walter E. Morrow, Jr., '49, as Associate Head, in the Space Techniques and Equipment group led by Herbert Sherman. Aluminum frameworks for several more LESes are now in a Lincoln clean room.

The LES is powered wholly by energy from solar cells on its 18 square faces. One of the designers' objectives was to test a system of switching from one antenna to another, to permit efficient use of radio power, and for this purpose the LES has earth sensors and antennas on eight triangular faces. This system, as well as the solid state transponder, performed well in the opening days of the experiment. A timer will shut off all the solar power in 1967. By then, more Titans will have toted more LESes aloft and experimenters will be guided by more reliable data.



The Titan III A leaving the Cape . . .



carried the Lincoln Experimental Satellite mounted to be sent still farther.

(The Trend of Affairs is continued on page 44)

What Salt Does in Your Body

Sodium participates in mechanisms that keep the blood neutral, distribute water, and enable your muscles to function properly

By Frederic W. Nordsiek, '31

A HOMESPUN philosopher once said, with more sense than syntax, "Salt is what makes things taste terrible when you forget to put it into them." Evidence archeological, documentary, and anthropological shows that all peoples have always prized salt.

Existing remains of salt mines have been dated authentically to the late Bronze Age, about 1000 B.C. As early as 400 A.D. the Chinese drove salt wells to deposits over a half mile below the surface. Salt availability more than any other factor originally drew dense populations to the valleys of the Jordan, the Nile, the Tigris-Euphrates, and the Yellow River of China. Peoples of pre-colonial Africa concentrated along the coast, where sea salt is plentiful. A sprinkling of tribes in the interior then depended (as some still do) on animal blood and urine for salt. Indigenous populations in pre-Columbian Mexico were mostly in the southern sections, where there are natural salt deposits.

Although salt is cheap, its sources are so limited that its supply may readily be controlled. Oppressive governments through the ages have contrived monopolies and imposed heavy taxes on salt. Such policies were a principal catalyst of the French Revolution. Gandhi's organization and direction of the famous salt march to the sea are considered to have been his crowning efforts towards Indian emancipation.

But is salt a true physiological need, like the human requirement for other minerals such as calcium or for such vitamins as ascorbic acid; or is salt a "comfort" or luxury, like alcohol, tobacco, tea or coffee? The answer turns out to be: Some of both.

THE BY-LINE ON *this article has appeared in The Review many times. Dr. Nordsiek is now vice-president of the Sloan-Kettering Institute for Cancer Research.*

What Salt Provides

Salt is sodium chloride; and both the sodium ion and the chloride ion are involved in animal life. The need for the element sodium is, however, the key to salt requirements and will be the thread of our discussion. Sodium participates in maintaining the vital neutrality of the circulating blood. It regulates water balance, so that the body neither becomes waterlogged nor desiccated, and so that water is appropriately distributed throughout the body. Migration of sodium ions across cell membranes is the basis of muscle contraction and of the transmission of impulses along nerves.

For human well-being, the blood must always be very close to neutrality. Several automatic mechanisms keep the blood neutral, and sodium compounds are principal participants in two of these. First is the "acid-base buffer" system; a complex and dynamic interplay of acid and alkaline compounds, whereby any deviation towards one extreme is immediately offset by reactions in the opposite direction. Second is a kidney mechanism, which employs sodium salts (phosphates or bicarbonate) to remove acid hydrogen ions from the blood by excreting them into the urine. Another way to show the importance of sodium in protecting the body against acidity is to say that over 90 per cent of the basic ions in the blood are sodium.

Water Balance

Salt's function in regulating water balance may be dramatized by considering the sequence of events in "heat exhaustion," when the body is drained of salt by heavy sweating as from vigorous exercise in hot surroundings.

A Verona salt shop in the 14th Century with the tax collector and his ledger in the entry, as shown in the House Book of the Cerrutti Family (a Bettman Archive picture).

First it must be pointed out that in the mammalian body, sodium is ordinarily maintained at much higher concentrations *outside* of the individual cells than inside. (How and why this differential exists will be explained shortly when we consider nerve and muscle function.) If sweating drains the body of salt, a succession of automatic defense mechanisms is set in motion. First is reduction by the kidneys of the rate at which salt is excreted. Second is reduction by the sweat glands of the concentration of salt in the sweat.

The only compensating mechanism now remaining for maintenance of sodium concentration in the extracellular fluids is reduction in volume of these fluids—and this is precisely what happens. Since the blood is one of the extracellular

(*Continued on page 40*)

Institute Yesteryears

As recalled by the late H. E. Lobdell, '17

25 Years Ago

ADMINISTRATIVE changes were announced in The Review for April, 1940: *"Harry M. Goodwin, '90,* Dean of the Graduate School and Professor of Physics and Electrochemistry, whose distinguished association with the Institute began 50 years ago, will retire in June with the rank of honorary dean. To succeed him the Executive Committee of the Corporation has appointed *John W. M. Bunker,* Director of the Research Laboratories of Biology and Professor of Biochemistry and Physiology.

"Dr. Goodwin has long been active in developing the Institute's graduate courses, and the prestige of the Graduate School is due in no small degree to his able leadership. He was appointed dean of graduate students in 1926, and in 1932 he was made dean of the newly created Graduate School, becoming at the same time a member of the Institute's Administrative Council. He has been chairman of the Faculty for the past year. . . .

"Nathaniel McL. Sage, '13, who is widely known among Alumni and in industry throughout the country as the Institute's placement officer, has been appointed director of Technology's Division of Industrial Coöperation. Acting head of the Division since the death last September of Professor *Charles L. Norton, '93,* he will continue as placement officer. . . .

"The Alumni Fund Board [has] named as the first director of the Alumni Fund, *Henry B. Kane, '24,* who recently joined the administrative staff of the Institute to assist in alumni and public relations activities. . . ."

50 Years Ago

IN THE even today still-lamented Boston *Evening Transcript,* it was noted that, "During the past few weeks the new Tech has risen into view across the waters of the Charles —a new feature, hereafter ever to be a great feature, of Boston's Back Bay Venetian aspects. Now that the roofs are on the great wings and one gets the shadows under the cornices and in the long window embrasures in a colonnade effect, and in the mass and sky-line, the reserve and refinement of the architecture show even across the river.

"So well balanced and proportioned are the great masses that they do not give the impression of the bigness of the scale that they really have. That is discovered only in the dwindling of the huge Riverbank Court which before this seemed a fairly large pile—while the defunct Boot and Shoe Exposition building [at 100 Memorial Drive] though of good enough proportions with its dome and pilasters—is made to look like 30 cents.

"It is on approaching the buildings along the Cambridge embankment that one discovers that the largeness of scale is carried out even to the size of the blocks of stone of which they are built. The expanse of the great court is something overwhelming, and yet, besides this, the buildings are so arranged, in enclosing it, as also to enfold two subordinate courts on either hand. . . ."

75 Years Ago

ANIMADVERSIONS aimed at Freshman Drill appeared with regularity twice or thrice a year in *The Tech;* and the salute touched off by the editor in his issue of April 3, 1890, was as follows:

"On Saturday mornings in the midst of the confusion that prevails in our combination armory and gymnasium, where the clang of arms is heard, mingled with the roll of the drum and bugle's blast, and the Freshmen disport themselves in accordance with the Articles of War, we are glad to notice the presence of a fairer element. The graceful uniform of our battalion has become the cynosure of the South End, and the gallant bearing of its wearers has won them admiration of a tender sort. Graced by the smiles of lovely women, the manual of arms becomes a drudgery divine, and dress parade a pleasure and a pastime. Salute the day that has dawned when fair women and brave men, and all things martial and poetic shall make our barracks their headquarters, with general admiration as the officer of the day."

► Another April news item reported by *The Tech*: "Ninety was duly glorified at the second annual dinner tendered to the Senior Class by the undergraduates, which took place in Odd Fellows' Hall, April 25th, and was in all respects a great success. About 400 men sat down to the spread and united in giving '90 a cordial send-off. The dinner was excellent in service and quality, and everything went smoothly, if we may except the noisy demonstrations which were supposed by their authors to be expressive and appropriate to the occasion. . . .

"The Committee in charge is to be congratulated; the soup was not served in pitchers this time."

100 Years Ago

AT THE 37th Meeting of the "Government," held April 24, 1865, "The President stated that the Building Committee had had under consideration for some time past whether or not to alter the form of the Building . . . by substituting a Mansard roof for the flat one . . ."

The matter was discussed at length after which it was voted "that the Government authorize the Building Committee to have this addition made, provided on careful estimate the consequent cost will not exceed $25,000."

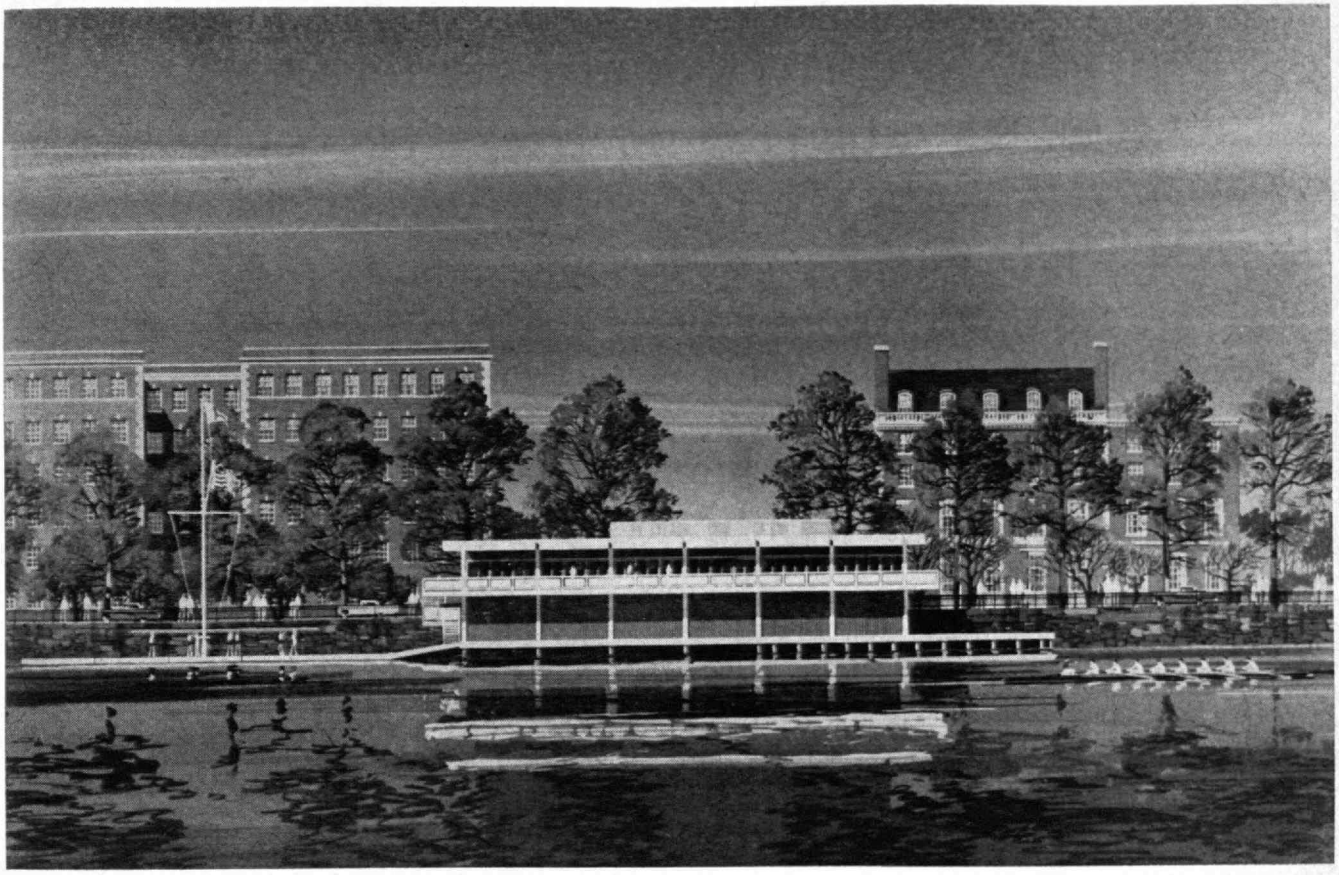
By the time of the 38th Meeting of the "Government," held May 24, however, it transpired that the "top-wall, as recently built, [was] not strong enough to sustain the proposed new roof . . . and the entire cost, including the necessary change in the wall [would] amount to $28,600." In view of these circumstances, it was decided not to substitute a "Mansard roof for the flat one originally agreed upon."

104 Years Ago

ON APRIL 10, 1861, the legislative Act of Incorporation of the M.I.T. (Chap. 183, Acts and Resolves of 1861) was signed by Governor John A. Andrew.

M.I.T. Crews Get New Boathouse

Construction will begin this spring—and it will provide the fastest rowing tank in the country



By Nelson Lees, '53

A GRANT from the Harold Whitworth Pierce Charitable Trust in Boston has made it possible now for M.I.T. to move ahead on a long-anticipated project: a new boathouse on the Charles River.

In 1922, shortly after crew was established as a permanent varsity sport, the Institute purchased the current boathouse near the Boston University Bridge from the Boston Athletic Association. For a long time it was an adequate, if somewhat distant, home for the fledgling sport. But crew has been so popular in recent years that new facilities have been badly needed. Pilings have been replaced, supports reinforced, and walls replastered in the 66-year-old boathouse, but the point of diminishing returns has long been passed.

"Whatever you are able to do in getting a new one," a crew Alumnus told Dr. Killian when making a generous contribution for the replacement, "will not erase the smell of the old one, which somehow will always come to mind when M.I.T.'s boathouse is talked of."

Construction of the new Harold W. Pierce Boathouse will begin this spring at the foot of Endicott Street, near Baker, Burton, and Conner Houses. The plans, based on careful studies at Harvard, Yale, Cornell, and the Naval Academy, call for a two-story, gray-and-white structure of wood and reinforced concrete. It will have storage space for 48 shells and 10 wherries and single sculls, locker and shower space, facilities for visiting teams, offices, and an observation deck for officials and press.

Significantly, it also will have a rowing tank (a platform exactly simulating the position of a standard 8-oared shell in a long tank of moving water). M.I.T. is now the only major rowing university in the north without such a tank, and the restrictions on practice imposed by Boston's climate have severely handicapped the Institute's enthusiastic oarsmen. The tank will have a maximum water velocity of 16 to 18 feet per second (velocity is increased as crews improve with practice). It will be the fastest tank in the country and will enable trainees to achieve a high stroke of 34 to 38 beats per minute, which has recently proven successful in international and Olympic competition. A new water-pumping system designed by M.I.T. Faculty members will make this high velocity possible.

The Pierce boathouse thus will both give varsity crews the facilities they need and encourage informal

rowing to an extent hardly dreamed of when the sport was first organized at M.I.T.

Crew history really dates back to March, 1910, when A. Griswold Herreshoff, '12, organized a varsity crew. Partly through the personal appeal of President Maclaurin, the Northwestern Alumni Association (in Chicago) subscribed $560 for a shell (temporarily one was hired from the Harvard Athletic Association), the Union Boat Club promised the use of its boathouse, 65 men turned out for the first crew meeting, and practice began. *The Tech* reported that Coach O'Leary wished to impress on the candidates "that there is no necessity for being a swimmer as the shell will be perfectly stable and safe," but his optimism has long since been supplanted by rigid swimming tests. The crew rowed five local races that year, winning three and losing one, with the fifth called off when the opposition's boat swamped in rough water.

The next spring, in 1911, nothing was done about crew until late in April when the U.S. Naval Academy invited M.I.T. to race at Baltimore. This was too golden an opportunity for Manager Herreshoff to let pass. He hastily assembled a crew, mounted a fund campaign, rented a boat every afternoon from the Riverside Club, and started practice. Three weeks later they were in Baltimore. It was a tight race until the last half mile when, according to *The Tech,* Navy forced the stroke up to 38 while M.I.T. reached 32 and "amid great cheers and deadening blasts of whistles the Navy passed over the line, barely two lengths ahead of a crew that had been in a shell only a little over three weeks." Victory or no, it was a glorious moment.

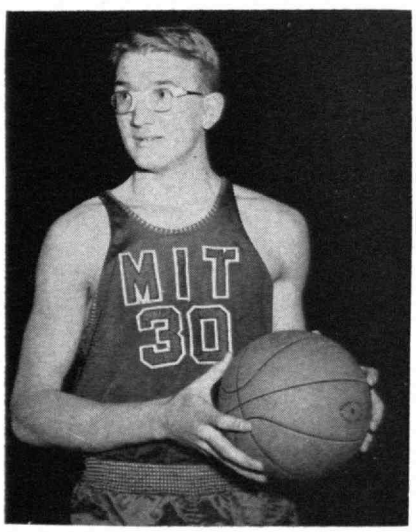
In the succeeding years there was practice but little racing. In 1912 a Junior Prom donated $25 of its surplus to the crew "to make up to a degree the deficit in the finances of that activity." Interclass races were held and in 1915 M.I.T. raced with the Harvard freshmen, who won. This, *The Tech* said, was "hardly surprising. . . . On account of the difficulty of getting together the same crew for each practice, it has been necessary to work with whatever men happened to appear at the boathouse." There was another flurry of activity in 1916 when a "Technology Varsity Four" won in a Harvard invitation regatta. Then crew reverted to an intramural sport as the Institute moved into the dark years of World War I.

After a particularly enthusiastic interclass race in 1919, a crew was again formed which rowed against the West Lynn Boat Club. According to *The Tech's* cheerful reporter, "The Technology crew were the favorites in the race and they well bore out this confidence by good teamwork that kept them ahead until shortly before the finish. . . ."

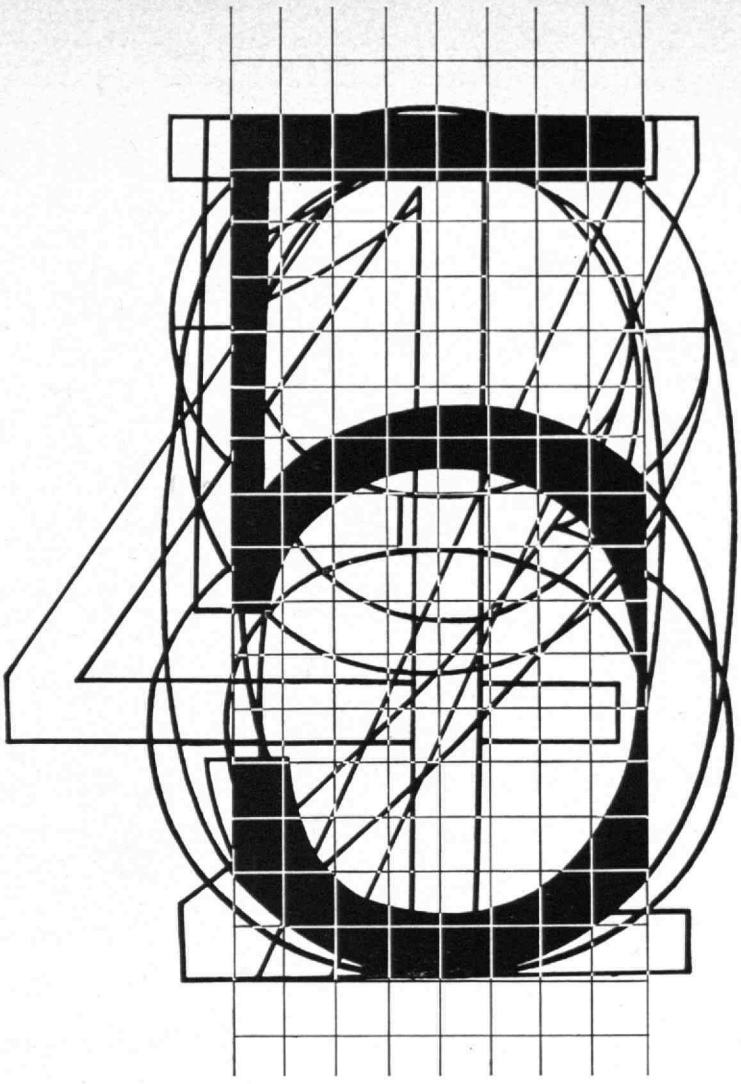
The following spring, in 1920, crew really took hold. A varsity crew was formed, led by Colby W. Bryden, '22, Walter B. Driscoll, '22, Trevor O. M. Davidson, '21, Irving D. Jakobson, '21 (Captain), H. W. McCurdy, '22, John C. Molinar, '22, Donald G. Morse, '21, Clift R. Richards, '22, and Wilbur J. Woodruff, '22. The varsity and underclassman crews made strong showings and enthusiasm was generated that has kept crew an active sport ever since. M.I.T. crews now have made impressive showings both in eastern intercollegiate regattas and in the Henley Royal Regatta in England (where the light varsity won the Thames Challenge Cup two years in a row in 1954 and 1955).

Technique noted in 1920 that "Crew needs the backing of all the Institute to expand. A new boathouse and equipment are badly needed. . . ." Since the purchase of the boathouse in 1922, however, there has been no major expansion of facilities. Now, with $300,000 from the Pierce Charitable Trust and donations from many former crew members, the Institute will soon give the oarsmen the fine facilities they have needed.

M.I.T. ATHLETIC STARS included two sophomores this year. Goalie Avram Markowitz made 134 saves in 11 games.



Alexander D. Wilson was chosen as small college sophomore of the month by the Eastern Collegiate Athletic Association.



What tells the machine, "I am a 5"?

Designing recognition logic is a key to developing systems for recognizing handwriting, multifont printing, or magnetic-ink characters. Engineers face the questions: What minimum information must the scanner sense from a character, and what measurements are necessary to ensure accurate recognition?

There are a number of aspects of character recognition you might work on: computer simulation of new recognition logic, investigation of the probability of accurate recognition for different styles of writing or printing, or development of new methods of scanning the characters.

The field of character recognition and associated areas such as document handling could be of great potential for you at IBM. Write to Manager of Employment, Dept. 615D, IBM Corporate Headquarters, Armonk, New York 10504.

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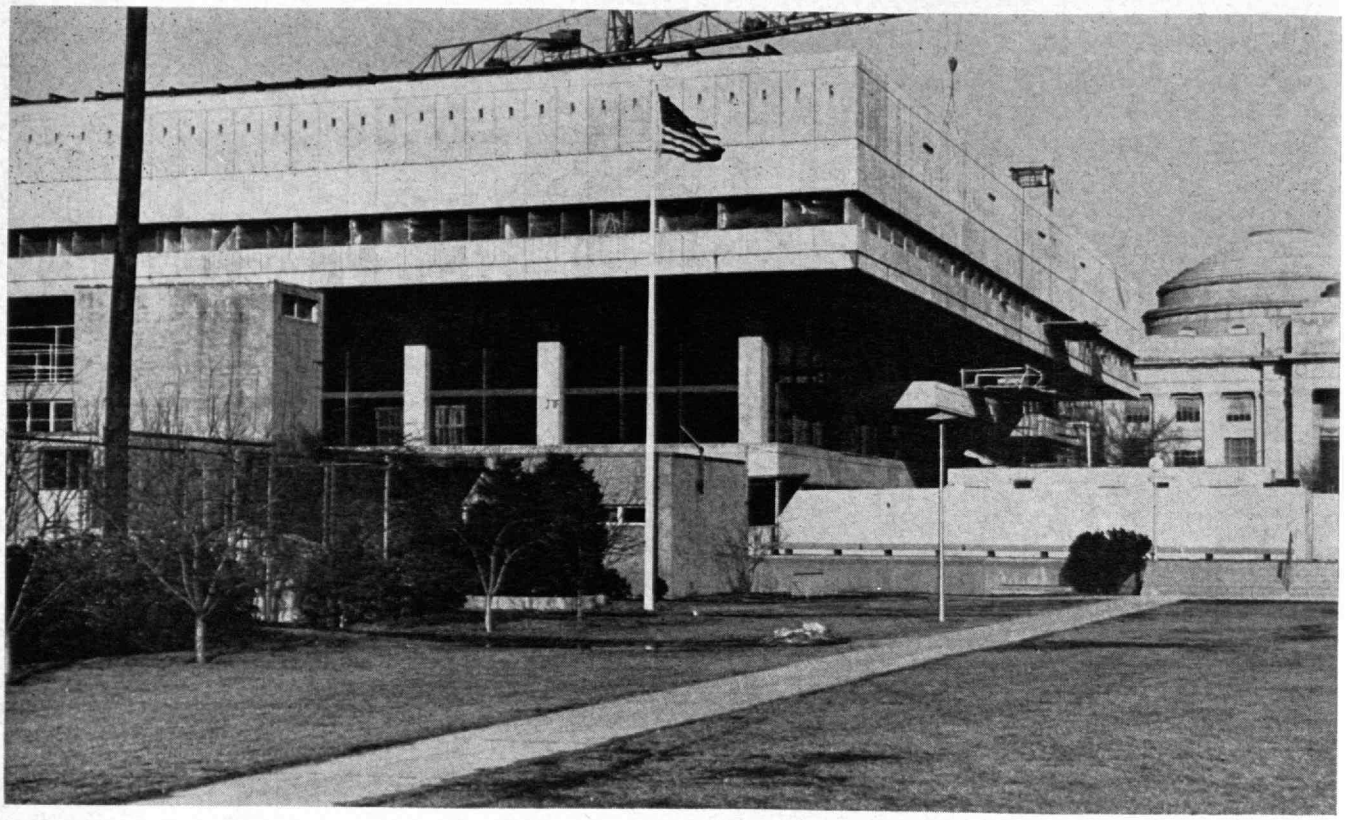
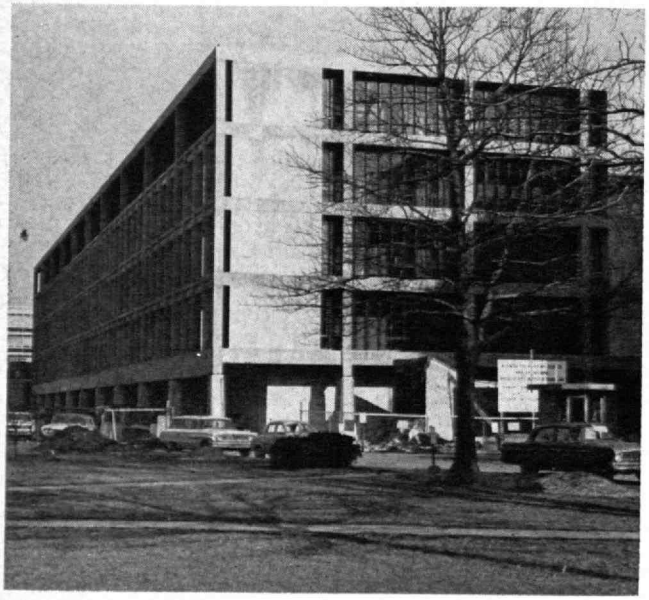
New Views of the Institute's Campus



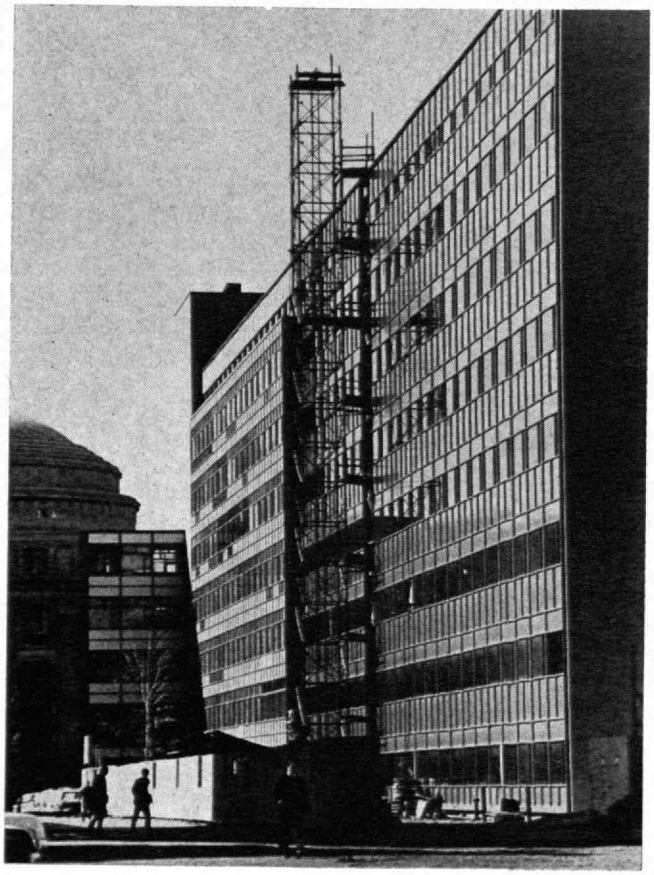
New Student Center is where there used to be a drugstore.

ON ALL but the Charles River side of the Great Court there have been changes in the M.I.T. campus this spring. These photos by Major Morris show only three of those former students will note when they return for Alumni Day next June 14.

In addition to the new Student Center (above) and homes for the Center for Materials Science and Engineering (below) and the Life Sciences Center (at right), the Grover M. Hermann Building near the Alfred P. Sloan Building is rapidly nearing completion.



Materials Building occupies what was the main parking lot.



Corridors trod by life scientists are now twice as long.

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New Books

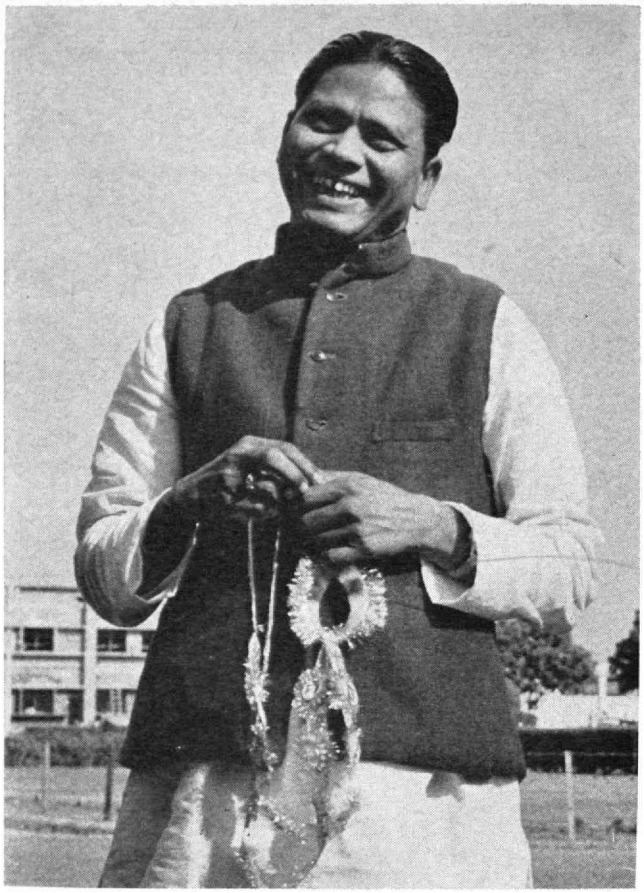
INDIA'S EX-UNTOUCHABLES, by Harold R. Isaacs of the M.I.T. Center for International Studies *(John Day, $4.50).*

Reviewed by Professor Emeritus B. Alden Thresher, '20.

EVERY SOCIETY is plagued, some lightly, some most grievously and tragically, by the phenomena of caste and class. Starting usually with a core of economic preference and exploitation along occupational lines, these systems of invidious social distinctions and differentiations grow into tangled thickets of privileges and interdictions. In this book an experienced reporter and analyst of social forces dissects and mounts for us a series of exhibits showing India's efforts to rid herself of the most abhorrent feature—untouchability—of the world's oldest caste system.

Caste-like distinctions in, say, South Africa or the U.S.A. are, after all, relatively recent, and their beginnings lie open and accessible to research. Not so in India where the origins of caste are lost in the mists of prehistory. The effects of great antiquity are reinforced in an introspective, rural society in which tradition is all-powerful and "nothing ever happens for the first time." Gandhi sought to reform the caste system; Nehru sought to abolish it. The Indian Constitution of 1949, accordingly, outlawed untouchability. Isaac's book is essentially a study of how far this prohibition can be made truly effective. The answer, to date, is—only a little.

It is true that a tiny minority of Untouchables have achieved education, status, even prominence. But the obstacles are staggering. One puts down the book with



A 38-year-old Ex-Untouchable, Damodaram Sanjiviah, became chief minister of the state of Andhra in 1960.

the feeling that the chief solvents of these anachronistic practices will prove to be industrialization, urbanization, and the general onset of rational, modern lifestyles, with legal prohibitions playing an auxiliary role.

No other caste system in the world, according to Isaacs, possesses the special feature of untouchability as an aggravating element. "Caste" Hindus include four major subdivisions. Of these, priests (Brahmins), warriors (Kshatriyas), and merchants (Vaisyas) together comprise only 90 million of the population, while the servitors (Shudras) number 250 million. Below all these, in a kind of "subhuman" category are the 85 million Untouchables—a 15 per cent minority of the population.

"As the system added refinements over the dim ages, the Untouchables were also made Unseeable, Unapproachable, Unbearable. The details are frequently Unbelievable. In many places they could not enter at all upon streets or lanes used by caste Hindus, or else they had to carry brooms to brush away their footprints in the dirt behind them as they passed . . . By some rules an Untouchable had to shout a warning before entering a street so that all the holier folk could get out of the way of his contaminating shadow. By others he could not raise his voice at all because the sound of his voice falling on a caste Hindu's ear was deemed to be as polluting as his touch." Isaacs does not press

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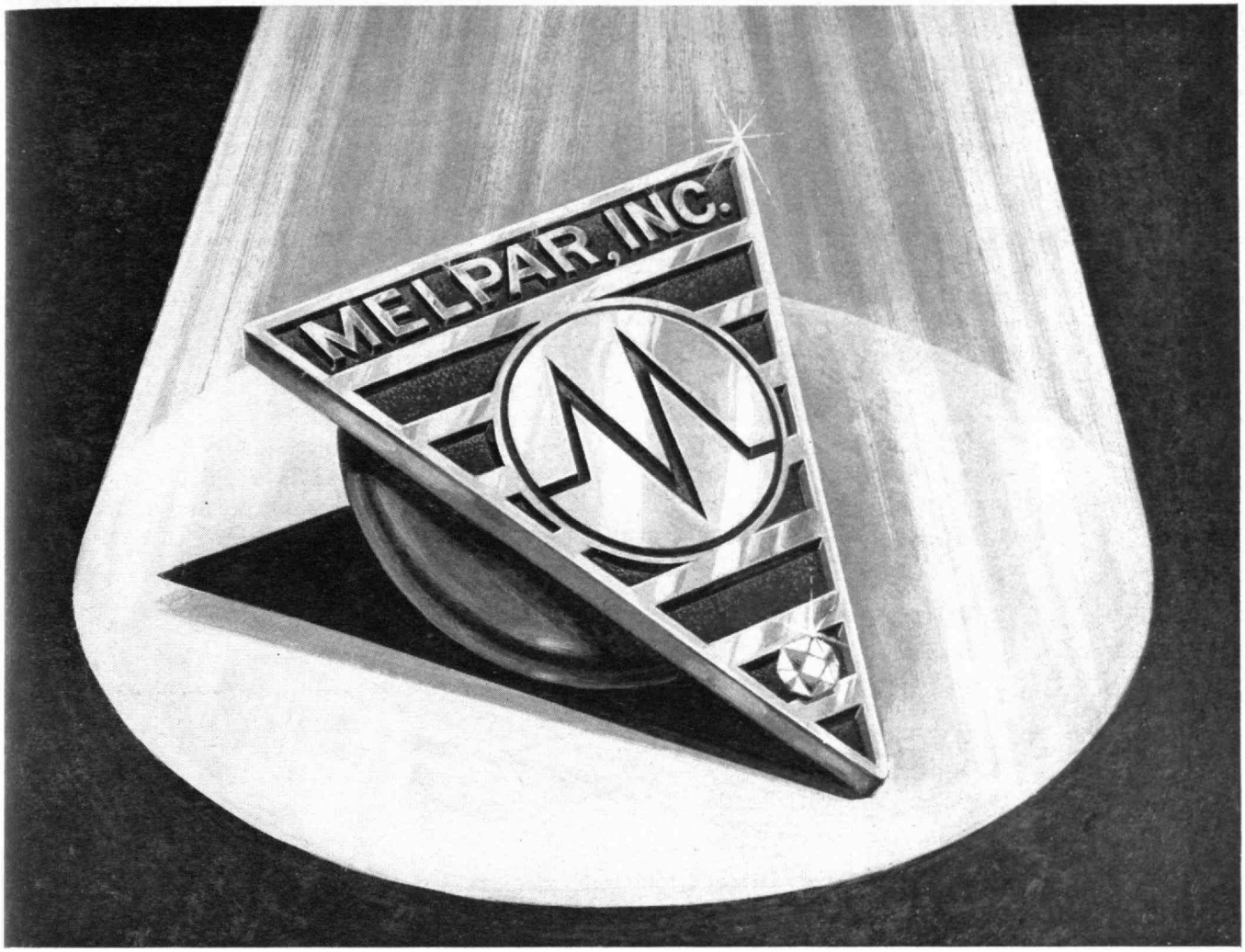

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the point, but the parallels that exist in Mississippi, or for that matter in Massachusetts, will not be lost on the reader. We have seen a good deal of ceremonial untouchability in swimming pools, beaches, schools, parks, and housing.

While the Indian Constitution swept away untouchability *de jure,* it is a tough institution. Among the most fascinating aspects of Isaacs' book are his analyses of the circumstances in which it persists. Among the cosmopolitan elite in the cities, caste is a dirty word, seldom mentioned, or brushed lightly aside as something now outmoded. But in a country of 700,000 villages, the roots of village life and village tradition go very deep. An ex-Untouchable who may be able to "pass" in the relative anonymity of the city finds himself trapped when he seeks a new job and must declare his "tribe" (there are hundreds of these local subdivisions of untouchability). Or if not then, it will be when he marries. Marriage in India is overwhelmingly endogamous; caste is almost impossible to conceal when marriage is being negotiated with the attendant investigations of "suitability." And if not then, it will be when a relative dies and, by imperative custom, only relatives may come to prepare and move the body. Their whole bearing and dress proclaim their station.

Even the governmental measures that seek to ameliorate the conditions of the ex-Untouchable by financial grants for education carry their own built-in trap. He must declare and prove his untouchable origin in order to qualify as among the "Scheduled Castes," which is the legal euphemism for ex-Untouchables. So by his very effort to shed his identity, he is forced to proclaim it so that it sticks the more tightly to him thenceforth.

Large numbers of ex-Untouchables have sought to evade this requirement of declaring their origins by embracing Buddhism, while lesser numbers have turned Christian or Muslim. It is ironic that sometimes their traditional status has followed them thither, so that there are instances of Anglican or Catholic congregations with separate seating, or even separate church edifices for members of the "Scheduled Castes."

The contagious and corroding nature of these practices is illustrated by the marked tendency of untouchable tribes to set up within their membership "ranks, conditions, and degrees" so that so far as possible, even the lowliest is provided with someone even lowlier to look down upon, to shrink away from, and to feel superior to. Pride ranks high indeed among the seven deadly sins.

This is a book for every American to read. His first reaction will be—thank God we are not like that. Close upon it will come his second thought—perhaps, after all, we are.

High-Energy Physics

(*Concluded from page 12*)

high energy at the centers of galaxies. These phenomena are obviously connected with the interaction of particles at very high energy, as studied in subnuclear physics.

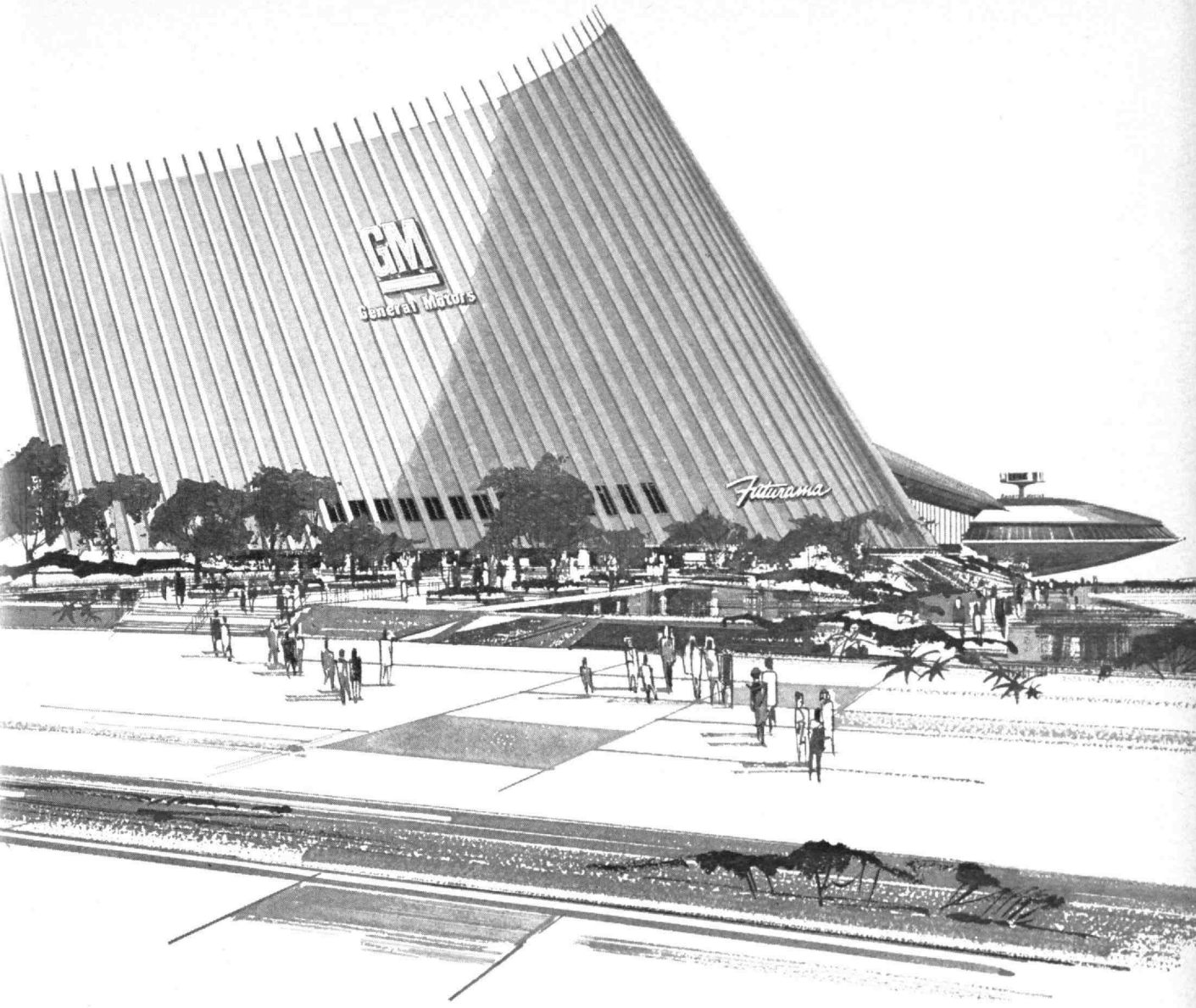
We are facing today a situation in which it is threatened that all this promising research will be slowed down by constraining financial support to high-energy physics. And this constraint is based, partially at least, on a claim that the aim of this field is narrow and restricted. The three above-mentioned groups of unsolved questions should be sufficient to invalidate this claim. It is granted that further progress, say, in biology or in solid state physics is possible without any further research into the subnuclear field. But let there be no doubt that the style of the scientific community would change its character if the frontier of intensive research were hampered. It would subtly change towards overemphasis on extensive research, and this would harm all fields of science. A spirit would be fostered, different from the one which created modern science, if basic questions that can be answered are left unanswered or are neglected by lack of attention. The questions remain, they cannot be overlooked.

This different spirit will do most harm in the education of young scientists. The study of science is based upon a burning interest in fundamental problems. The attitude of students would be perverted if they were not constantly aware of a lively quest for the solution of the basic problems of science. Even the scientist who will devote his life to purely extensive research must be aware of the existence and the spirit of intensive research. The reason is that, even in the most extensive research, at every step there is always an intensive component: at each unsolved problem one must go back to some fundamental idea, one must try to see more of the essence of the problem. This is an attitude which can be fostered and maintained only if intensive and extensive research have equal standing in the scientific community. There is one broad front in science and each part of it must be pushed forward with full vigor.

We find strong support today for space technology, which may allow us to explore the unknown parts of the solar system. Exploration of the unknown was always a strong component of human endeavor in our modern civilization. But it must go together, as it always did, with an equally strong component: the explanation of the unknown in whatever form it faces us. In the beginning of the Sixteenth Century, when the scientific era began, Magellan performed the first trip around the earth. But also in the same period Copernicus published his work on the motion of the planets.

Notes for Posterity

M.I.T. WILL BE represented in the Westinghouse Time Capsule to be buried at the New York World's Fair this year by books by the late Professor Norbert Wiener and Associate Professor Martin Greenberger.



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Basic Physics' Growth at M.I.T.

(*Concluded from page 15*)

It follows, then, that an outstanding ingredient in M.I.T.'s production of leaders in science and education is the extensive and varied activity displayed to the student by the staff of the Physics Department at work in the nuclear science and other interdepartmental laboratories such as the Research Laboratory of Electronics. Interaction between research and teaching takes place in many ways, the most direct of which is through thesis research. The research of about half the Institute's Ph.D's in physics (i.e., half of about 4 per cent of the national output) is supported by the Laboratory for Nuclear Science. Unlike many institutions, we have also an especially active undergraduate senior thesis research program, and a large fraction of our physics seniors do substantial research, using the laboratory's facilities in close contact with the nonacademic as well as the professorial research staff. The coincidence of purpose between research and teaching is evident, too, in the direct support of graduate assistants by research money: 55 per cent of the graduate assistantships in physics at present are supported by the Laboratory for Nuclear Science.

The existence of a wide variety of modern research helps teaching not only at the home institution, but contributes also to the national educational effort. Films on relativity made at our laboratory, for example, now bring to students at small colleges a view they could not otherwise get of the application of modern instruments to basic problems.

As to practical matters, the wealth of contributions from basic physics in recent decades seems convincing evidence of its real and potential utility. These achievements, Robert Oppenheimer has noted, "have inspired the whole scientific enterprise, and lighted the world of technology, and the whole of man's life." In regard to our national welfare, it is worth noting that an incidental but important consequence of having large research laboratories is that the experience of scientists and administrators with government funding of research inevitably prepares them also for the exigencies of emergency research organization. And as a growing national enterprise, the vigorous, bold, and flexible research that proceeds in government-supported university laboratories provides a major part of our cultural strength—revealing new knowledge, aiding the teaching of old knowledge, and storing up intellectual and organizational capital for use in the future.

As men long ago learned, much of wisdom lies in knowing what it is that we do not know. Our cultural strength can probably be fairly appraised, in fact, not only by the extent of our knowledge but also by the way in which we both admit and face our ignorances. Our confidence in that strength depends in part, at least, on the extent of our conviction that we are striving with all our resources to advance the boundaries of our knowledge, as individuals and in giving opportunity to those with the capability and desire to do so.

What Salt Does

(Continued from page 25)

fluids, its volume decreases progressively. In consequence the blood pressure falls, the pulse accelerates, and some of the veins may collapse. If allowed to proceed, heat exhaustion eventuates in muscle weakness and cramps, mental apathy, fainting, and an array of other distressing signs and symptoms.

Nerve and Muscle

The third cardinal role of salt, which is in nerve and muscle function, depends on the extracellular preponderance of sodium already described. This differential is maintained by a positive, energy-consuming mechanism which is called "the sodium pump" but which is not at all understood. Since sodium is thus preferentially pumped out of cells, potassium to some extent flows inward by free diffusion, in order to move partially toward osmotic equilibrium. But a sufficient imbalance ordinarily remains that there is usually a small electrical potential across all cell membranes.

In a resting nerve cell, the membrane potential is something like 70 or 80 millivolts. When a nerve is sufficiently stimulated, the cells "fire," sodium pours inward, and the membrane potential temporarily disappears. This electrical phenomenon moves rapidly along the nerve cell and constitutes the nerve impulse.

Nerve impulses produce a variety of effects, not least among which is the contraction of appropriate muscles. When the "depolarization" of a nerve that has fired reaches a muscle to which the nerve is connected, the impulse sets off a similar firing of the muscle cells. Sodium surges into the muscle cells, the electrical potential across their cell membranes fleetingly disappears, and the muscle is thereby led to contract. Muscle cells normally have the standard preponderance of potassium ions within, to balance in part the external predominance of sodium ions; and the proper functioning of muscles depends upon this relationship. Now it becomes clear why heat exhaustion, as told a moment ago, leads to muscle weakness; for the leakage of potassium from within muscle cells to substitute for

the lacking sodium outside produces a disruption that hampers muscle action.

How Much Is Needed

Salt enters the body with foods and if salt intake is reduced, the kidneys automatically respond by reducing the amount of sodium in the urine, down to the equivalent of perhaps two grams of salt per day. Below this minimal output the kidneys cannot conserve sodium. Therefore the normal healthy human being usually must ingest at least some two grams of salt, or the equivalent, daily. This does not imply that salt must necessarily be added to the diet, since many natural foods, and virtually all processed or manufactured foods, contain sodium salts.

In the tropics where vigorous physical activity may produce sweat volumes as high as eight liters a day, salt intakes up to 30 grams daily may be needed. The same is true of occupational situations such as those of furnace workers. Ingestion of this much salt with foods may be impractical; if so, salt tablets may be swallowed with drinking water, but they have value only in extremely hot situations. Swallowing salt tablets during temperate zone summers is quite ineffective, although this practice was in vogue some years ago.

Civilized man has a taste for salt, however, several times his real need for it. Actual intake varies widely according to custom and personal preference, but in the temperate zone has been found to range commonly up to 15 grams per day, and sometimes to twice this amount. Does such extra salt intake have any significance in healthy people? A noted writer on the subject, Dr. Hans Kaunitz of Columbia University, holds that it does. He suggests, although on grounds more philosophical than empirical, that extra salt may provide a comfort important to help one withstand the exigencies of modern society.

Too Much Salt

In a variety of illnesses, a salt intake not above customary levels may be physiologically excessive. High blood pressure, not infrequently an ailment of middle or later life, is often treated by restricting salt intake.

(*Concluded on page 42*)

What Salt Does

(*Concluded from page 41*)

Indeed it has been pointed out that some primitive peoples in Africa and Asia, who have sharply limited salt supplies, do not as commonly fall prey to hypertension in middle age as do the highly civilized nationalities. The observed facts cannot be challenged, but many environmental and genetic differences make the cause-and-effect relationship which some have postulated dubious.

Hence there is no basis for self-imposed salt restriction to prevent or defer onset of high blood pressure. It is true that some doctors believe high salt intake aggravates any inherent tendency to hypertension, but only a doctor can decide on preventive measures. And although salt restriction is part of the treatment not only for hypertension but also for a variety of heart, circulatory, and kidney disorders, such restriction should always be under ongoing medical supervision. Indeed, authoritative geriatricians have warned that indiscriminate salt restriction in the aged may lead to serious salt depletion in the body, especially when the weather is hot or if a fever occurs.

A Duet with Water

The classic example of excessive salt intake is provided by castaways who swallow sea water when they are without drinking water. Since sea water contains a higher concentration of salt than the fluids within the human body, its intake simply forces the kidneys to usurp some of the precious internal water to flush excess salt out into the urine. As experience during World War II amply demonstrated, drinking sea water merely hastens death by desiccation.

Although our discussion has focused upon salt, much of it has turned out to be a duet between salt and water. The biological significance of salt is thus validated, since water is acknowledged to be a prime requisite of life, as the present author pointed out earlier in The Review (*see* "Precious Commonplace," June, 1958, page 410). John Masefield sang the relationship in one of his sonnets, when he called life ". . . a thing of watery salt, held in cohesion by unresting cells . . ."

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Trend of Affairs
(*Continued from page 24*)

A Solid State Physics Program

THE M.I.T. CENTER for Advanced Engineering Study will offer a special program in experimental solid state physics August 2 through September 3 for persons engaged in industrial work or teaching elsewhere.

Each participant will have an opportunity to perform six or seven experiments, with sufficient time to appreciate the capabilities and limitations of the techniques, the problems of handling specific materials, and the relation of theory to the interpretation of the experiment. Lectures will be given to provide background and M.I.T. library facilities will be available. The experiments chosen will be concerned with basic properties of materials rather than with specific devices—magnetic resonance, for example, will be studied rather than masers—but the experiments will be closely related to present-day devices.

Further information may be obtained by writing to: Solid State Physics Program, Room 24-410, Center for Advanced Engineering Study, M.I.T., Cambridge.

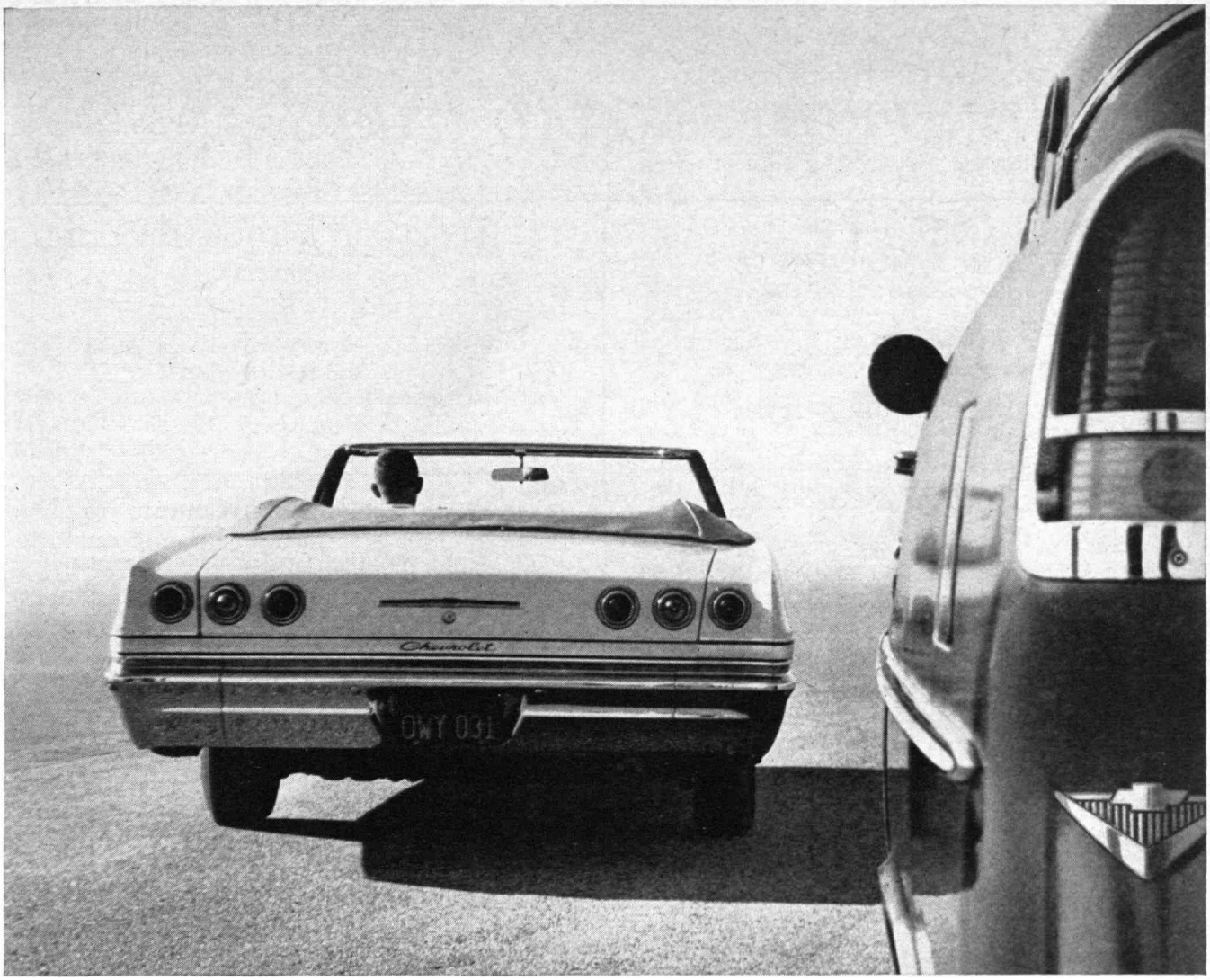
Student's Logic Box Patented

A THIRD-YEAR M.I.T. student has been granted a patent on a teaching device for solving problems in syllogistic logic. Marion Loren Wood, Jr., '66, received patent number 3,166,857 for the device which he built in 1961, when he was a high school sophomore, as an entry in the Westchester County (N.Y.) science fair.

The machine is a small box containing Boolean algebra circuits and banks of switches for setting up problems. A typical problem might have the major premise that "countries with a high standard of living favor democracy" and a minor premise that "Western European countries have a high standard of living." If a student makes the right moves he gets the answer: "Western European countries favor democracy."

Mr. Wood, who is 18, finished high school in three years and at M.I.T. has been on the Dean's List as well as a member of the lacrosse and hockey teams. A student in Electrical Engineering, he is the son of M. Loren Wood, Sr., '40, a Course VI graduate now with International Business Machines Corporation.

(*Concluded on page 47*)



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Science and Dentistry

A FURTHER EFFORT to bridge "the dental gap" will be made this summer when M.I.T. offers a special course in "Applications of Basic Science and Engineering to Oral Prosthetics" primarily for professors from dental schools.

An Oral Science Program was started in the Department of Nutrition and Food Science in 1963 to prepare young dentists for careers in dental teaching and dental research by enabling them to study advanced science and engineering. Five young graduate dentists are now working for Ph.D. degrees at M.I.T. and the number is expected to rise gradually toward 15 when it is in full operation. A number of older dental educators have been intrigued by the program but unable to participate in it because of age or commitments. So a series of annual short summer courses is now being planned. The first will be given this year (June 28 through July 2) and is designed especially for specialists in orthodontics.

Professor Robert S. Harris, '28, is in charge, and the lectures will deal with such basic topics as the biology of bone, muscle, and nerves, materials and their effects on oral tissues, and geriatric problems. The speakers will include men seldom identified in the public mind with dentistry; M.I.T. Faculty participants, for example, will be Francis O. Schmitt, Institute Professor of Biology; Arthur R. Von Hippel, Institute Professor of Electrophysics, Emeritus; Walle J. H. Nauta, Professor of Neurophysiology and Neuroanatomy; Patrick D. Wall, Professor of Physiology; Abraham E. Nizel, '51, of the Department of Nutrition and Food Science; and Jerome Y. Lettvin, '47, of the Department of Electrical Engineering. Professors from the medical and dental schools of Harvard, Tufts, and Boston Universities and other research centers also will lecture on subjects related to oral biology and pathology.

A grant from the W. K. Kellogg Foundation has made the course possible. In future summers, this course will concentrate on basic aspects of problems peculiar to orthodontists, endodontists, and periodontists. Both junior and senior men on the faculties of dental schools and diplomates among practicing dentists are being invited to attend.

Global Computing Service

VIA a radio-teletype link, civil engineers in Buenos Aires recently joined a score of other simultaneous users of an IBM 7094 at M.I.T. In previous experiments the multiple-access computer had been consulted from Europe via wire and cable systems. M.I.T. Civil Engineering professors have been participating in research with colleagues in Central and South America since 1961. A group including Robert D. Logcher, '58, Frederick J. McGarry, '50, Russel C. Jones, Paul O. Roberts, Jr., '57, and E. Farnsworth Bisbee, abroad on such business, joined Professor Horacio Reggini of the University of Buenos Aires in this experiment.

Class News

'92

Joshua Crane died at the home of his grandson in Lake Worth, Fla., on December 7, 1964, at the age of 95. He was an internationally known sportsman, bridge expert and football coach. Before entering the M.I.T. Class of '92, he was graduated from Harvard University, where he later coached the football team. Mr. Crane was an amateur tennis champion, a member of the Boston Athletic Association, a yachtsman, polo player and author of a book, "How to Grow Old Comfortably." Mr. Crane leaves three daughters. The funeral services were private.

'95

On last February 23, one of our members, **Robert D. Farquhar,** who lives at 2930 Avalon Avenue, Berkeley 5, Calif., became our first 93-year-old member, as he was born in 1872. His interest in golf is still strong and although a full course is a bit too long, he can still make a good record on the club's home tee.—**Andrew D. Fuller,** Secretary, 120 Tremont Street, Boston, Mass.

'96

Walter O. Pennell lived in St. Louis when he retired as chief engineer of the Southwestern Bell Telephone System to live in his home town of Exeter, N.H. There he married his second wife, an Exeter girl, and had two children. He writes: "I can hardly realize I am as old as 90 years, however, I have much to be thankful for. I am in good shape and play golf when the weather and grounds permit. In fact I have just purchased a "K.Smith" number 4 wood as my number 3 wood did not give me enough lift to the ball." The last sentence certainly proves that he is in good shape and has much more on the ball than the extra lift his new club can give him. . . . **Herbert D. Newell,** 93 years old, 4837 E. Tyler Avenue, Fresno 2, Calif., has an apartment attached to his son's house. He writes: "I get my meals at the home of my son, go to church with the family, and ride with them here and there. Last summer we took a plane via San Jose and San Francisco to Portland, Ore. We covered 800 miles in a rented car in the vicinity of Portland visiting relatives and friends. I am clumsy, physically, yet putter about the yard and accomplish little." He was with the U.S. Reclamation Service from 1903 until his retirement.—**James M. Driscoll,** Secretary, 129 Walnut Street, Brookline, Mass.

'97

Most of us can, no doubt, remember the delights of the "Uncle Remus" tales of nearly a century ago and how Brer Rabbit, usually the victor in his encounters with Brer Fox was caught by the Tar Baby constructed by Brer Fox just because the "Tar Baby kept on saying nothing.'" Or perhaps you remember in "Alice in Wonderland" when the elder oysters were invited to a walk by the Walrus, and were equally uncommunicative. Apparently we have many emulators of Tar Baby and the elder oysters among the survivors of '97, or perhaps they do not read the Class News. Not even an obituary has been received. The above can scarcely be called class news but for want of more communication it must serve. None of the contests seem to have aroused interest. Perhaps the subscription list is very limited. I'll find out more about it.—**George R. Wadleigh,** Acting Secretary, 70 Flower Avenue, Hastings-on-Hudson, N.Y.

'98

We have received an article clipped from "The Guggenheim Medalists-Architects of the Age of Flight." This article commemorates our own **Lester D. Gardner,** a Medalist for 1947, for outstanding achievement in advancing aeronautics, and particularly for his conception and organization of the Institute of the Aeronautical Sciences. Most of us are probably familiar with Lester's achievements, but as they were so outstanding, we believe the class will be interested in reading again about the work he accomplished. We quote from the article: "The contribution of Lester Durand Gardner to the advancement of the age of flight was unique: the creation of the Institute of the Aeronautical Sciences, later the Institute of the Aerospace Sciences, which continues its force into the space age as one of the two progenitors of the American Institute of Aeronautics and Astronautics, the other being the American Rocket Society. Lester was graduated from M.I.T. as Bachelor of Science in 1898 and after a year of graduate study in Administrative Law at Columbia University, was employed successively on the editorial staffs of The New York Times, New York Tribune, New York Sun, Collier's magazine and other publications. In the early days of radio broadcasting, he gave weekly talks on the progress of aviation. He rebroadcast observations made from an airplane during an eclipse of the sun and arranged for the first demonstration of ship-to-shore radio telephone. In 1915, he organized the Gardner Publishing Company which started Aviation, Who's Who in American Aeronautics, and The Rubber Age.

"When the United States entered World War I, Gardner became, in 1917, a lieutenant in the Aviation Section of the Signal Corps. Was soon promoted to a captaincy in the regular Army and while on duty at Kelly Field, Texas, organized 89 aero squadrons for overseas service. Ordered to Washington to serve on the Control Board of the U.S. Air Service, he was promoted to major. Was on flying status when discharged from the Army in 1918. In 1932, he, with several leaders in American aviation, organized the Institute of the Aeronautical Sciences and was its executive officer for 14 years. The Institute grew rapidly and Gardner started publication of the Journal of the Aeronautical Sciences and The Aeronautical Engineering Review for the Institute. Various contributions of funds and valuable historical treasures came to the Institute as a result of his efforts. In 1942, the Daniel Guggenheim estate on Long Island was given to the I.A.S. by Mrs. Florence Guggenheim and in 1945 the Institute purchased the residence of E. J. Berwind at the corner of Fifth Avenue and 64th Street, New York, which it occupied as its headquarters. Gardner retired as chairman of the Council of the Institute in 1946 but continued his interest in the organization until his death on November 23, 1956, in New York City."

We have also received from the New England Newsclip Agency, Inc., an article dated December 11, 1964, printed in a Malden, Mass., newspaper, paying tribute to our late classmate, **Leroy D. Peavey,** whom we all remember, particularly perhaps, as president and director of the Babson Statistical Organization. The article is entitled "Nazarenes Plan Peavey Tribute" and reads as follows: "The address, 'Leroy D. Peavey's Golden Candlestick', prepared for Founders' Day at Eastern Nazarene College, will be presented Sunday evening at the Church of the Nazarene by its author, Miss Alice Spangenberg. Mr. Peavey, a native of New Hampshire, was, during his young manhood, a resident of Malden, and was for 25 years superintendent of the Sunday School at the Church of the Nazarene. He was graduated from M.I.T. in 1898 with a degree in engineering and became one of the founding trustees of Eastern Nazarene College. He was an associate of Roger Babson in the origin and development of the Babson Statistical Organization and was a nationally known lecturer on business trends. According to The New York Times, Mr. Peavey, as president of Babson's, predicted the great stock market crash of 1929 a full year before it happened. He died in 1937."

Dated January 16, 1965, questionnaire postal cards were mailed to 34 members of the class at their latest known addresses. Up to February 5, when these

notes were written for the April issue of The Review, six replies had been received. Of course we expect more to follow and they will be included in later class notes. Our card to **Edmund C. Little** however, should by all means be noted here. It was replied to by the executor of Edmund's estate, William R. Gentry, Jr., dated January 21, 1965, and we quote his reply: "I regret to report that Mr. Little died on December 12, 1963. I am the executor of his estate and it gave me pleasure to send a check for $5,000.00 to M.I.T., as specified in his will. Mr. Little has been in poor health for several years, but mentally he was sharp as ever. He came to St. Louis about 1903, worked as an architect for several years, and then built and sold apartments on his own, and did very well at it. His wife died in 1951; they had no children. After payment of the M.I.T. bequest, another bequest to Dean Junior College at Franklin, Mass., and to a local hospital, his estate will go to his wife's niece, nephew and a great-niece. We were friends for many years and I will continue to miss him, for he was a good companion." The class will be saddened by this news. On January 27 your secretary wrote to Mr. Gentry, Jr. with the wish that he express to the heirs the sympathy of the Class of '98.

As **Albion W. Shaw** of 73 Webcowet Road, Arlington, Mass., was the very first to reply to our card, perhaps the class news editor will allow us a little more space to quote from his letter of January 18 which reads as follows: "Replying to your postal card inquiry, I cannot say that I am in very good shape. Some weeks ago, I stepped on some unknown object on top stair of the 18-stair flight at the Haymarket subway station and pitched headlong down the entire flight, not breaking any bones but seriously bruising and wrenching my whole body. As a result I am unable to walk, except very slowly around the house, and cannot venture out on the street without an escort on whom to lean. So now I am completely house-bound. However, one peculiar and very good thing happened, viz.—I fell on my head on the concrete floor and broke my glasses. I have worn bifocals for forty years and the fall affected my eyes in some mysterious manner so that now I have practically 20/20 vision and am able to read the smallest type without glasses. My optician tells me he never heard of such a thing before. As for my general health, it is good and my regular physical examinations show all organs performing perfectly except my legs. Best regards to all members of the class and best wishes for the New Year of 1965. Sincerely, Albion W. Shaw." Thanks, Albion, for your informative letter. We are all, of course, sorry about your serious leg condition but pleased at the splendid result to your eyes. Perhaps other members of the class who have eye trouble may be tempted to try a similar fall. . . . On January 26, our President **Ed Chapin's** sister, Marion, wrote that Ed had recently caught a very severe cold and that his doctor ordered him to a nursing home in Marblehead for proper rest and treatment. So that is where Ed is now at time of this writing, February 5. Let us hope that within a reasonable time, he will be back at the Eliot in Boston.—**Frederic A. Jones,** Secretary, 286 Chestnut Hill Avenue, Brighton, Mass. 02135; **Edward S. Chapin,** President, Hotel Eliot, 370 Commonwealth Avenue, Boston, Mass. 02115.

'99

Stuart A. Courtis was born **May 15,** 1874, the son of William M. Courtis, a scientist and mining engineer and both father and son appear in "Who's Who." The death of his father terminated Stuart's career at M.I.T. after two years. He became a teacher in a girl's private school under the direction of a very wise woman, a member of the first class to graduate from Vassar, and Stuart found teaching a fascinating field of research. He received the degree of B.S. and the M.A. from Teachers College at Columbia University and the Ph.D. from the University of Michigan and became professor in the university's School of Education and Professor Emeritus in 1944. His long experience as a teacher of science and mathematics and as director of instruction, teacher training, and research in the Detroit public schools, and professor of education in what is now Wayne State University, helped him direct doctoral seminars in professional courses in the uses of tests. Professor Courtis developed the picture-story reading series, and tests in arithmetic, reading and spelling whereby the standards of different cities could be compared. Changes in the test results of individuals and groups in successive years showed various rates of growth at different ages and Stuart dedicated his later years to the wider acceptance in the education world of this truth. Citations from many associations have shown appreciation of his great work in developing better methods of instruction, adjusted to the capability of the individual student and so to inspire in the student a greater desire for knowledge. The Detroit Board of Education has recently named a school in his honor. So we applaud 90 years of service to the welfare of our younger generations.—**Percy W. Witherell,** Secretary, 1162 West Street, Wrentham, Mass.

'01

I have plenty of news for the April class notes owing to the deaths of several classmates. First **W. Fred Davidson** who died in a Los Gatos hospital after an illness of one week. He had been a resident of the county for 42 years. He was a partner in the Whiteside-Davidson Construction Company until 1930. His wife was his only survivor. He attended Stanford University in 1897 and graduated from M.I.T. in 1901 with a mechanical engineering degree. He died on December 29, 1964, and was buried in Oak Hill Memorial Park. . . . One of the greatest losses to the class was the death on January 7 of **Philip W. Moore.** He was one of our most prominent members, was at all the reunions, and helped financially and in many other ways. Both he and his wife were very pleasant people and did all they could to help the class socially. He was a founder and former president of Poor and Company in Chicago. He moved to Easton, Md., from Winnetka in 1951 following his retirement. He was born in Brookline, Mass., 84 years ago and was a 1901 graduate of M.I.T. Surviving are his widow, Caroline Daniels Moore, a daughter Mrs. Harriet Gelfan, a son Dr. Francis Daniels Moore of Brookline, 16 grandchildren and three great-grandchildren. Memorial services were held in Easton.—**Theodore H. Taft,** Secretary, Box 124, Jaffrey, N. H. 03452.

'02

Replying to a letter sent him on the occasion of the celebration of his 85th birthday **Robbie (J. Albert Robinson)** writes: "It was dangerous of you to suggest that I pass on some news about myself for one of the perils of being in my age bracket is to reminisce to the point of boredom. I can hardly realize that I was retired by McKesson and Robbins October 1, 1947, and that we are entering our eighteenth year as residents of Brunswick, Maine. I can truthfully say that these years of retirement have been the most enjoyable and productive of deep satisfactions of any period of my life. Besides the varying activities in which I have been engaged, removed from the restrictions and pressures of active employment, Brunswick has proved to be an ideal community in which to live. Among other advantages, Bowdoin College has afforded much stimulation and enjoyment by reason of the lectures, drama, music and sports made readily available to residents of the town. If we yearn for a bit of city life, Portland is nearby and quite adequate. The old house built about 1830 by the son-in-law of the first President of Bowdoin College (Reverend Joseph McKeen 1802-1807) which we had moved from the down-town location behind the Brunswick Savings Institution to a lot on a tract of land owned by President McKeen and his heirs for a century thereafter, has proved to be a source of comfort and satisfaction. You may recall that during the early years of residence here I busied myself in making appraisals for the Veterans Administration which gave me a classification under which I was taken into Rotary. I am enclosing a recent copy of The Merrymeeting Messenger, the weekly bulletin of the club, of which I was editor for 13 years with only one miss. You will note that it contains a paragraph relative to my recent birthday. I have long since given up the lay preaching, which sphere of activity I was called upon to pursue for a number of years. I am also entirely divorced from official activities in connection with local, state and national church affairs. My remaining outside activity of

consequence is my membership in the Town and College Club, now in its 80th year, consisting of 12 college faculty members, 12 townsmen and the college president. Ten meetings are held each season. One member in rotation serves as host and furnishes a banquet, while another member in similar rotation gives a 'learned' paper of an hour or more duration, after which it is discussed by five members drawn by lot, before being thrown open for general discussion. Each summer we look forward to the many out-of-state vacationing friends who stop by at 34 McKeen Street. Among classmates, the **Arthur Colliers** have been the most frequent. We miss seeing **Dan Patch** who often stopped over in Brunswick in traveling between Boston and his summer place in Friendship, Maine. We have not seen him since his retirement there."

Jumping from Down East to the Far West. **Albert E. Lombard,** Pasadena, Calif., has also given some personal news in his letter which follows: "Thank you for your recent newsy letter. Let me tell you that it is gratifying that our class has such a faithful secretary. How thankful we may be to our alma mater for its high standards of education which were so plainly in evidence during the four years we were in Tech. . . . Shortly after my graduation I entered the mortgage loan business, making first mortgage loans on real estate; a few years later the cashiership of a small bank in Kansas City, Mo., was added to my duties. After seven years there I left the bank as cashier and vice-president and continued in the mortgage loan business, which eventually led to my moving to California where in due course I was engaged in the construction of homes. Since moving to Pasadena my principal activities have been in connection with the Christian Science Church and I have enjoyed much happiness and harmony. If ever you are in Southern California please be sure to let me know. It would be a pleasure to have a visit with you." . . . Word has just been received of the death of **Joseph W. Ballard** in Greenfield, Mass., on last January 19. We hope to have more information later. —**Burton G. Philbrick,** Secretary, 18 Ocean Avenue, Salem, Mass.

'03

Your class secretary attended the M.I.T. Alumni Council meeting at the Faculty Club the evening of January 25 as the guest of **Ike Atwood,** our present and long-time Counselor. After the customary supper the audience, comprised of members from varying classes, listened attentively to a report of our Institute's progress. At the meeting's close, Ike mentioned that he and his devoted wife would take off in February for the balmy land of Puerto Rico to avoid the remaining severity of our winter even though they just recently returned from a visit to Canada. . . . On a recent visit to **Gus Eustis'** office in Boston, I learned from his secretary that he was temporarily absent on one of his occasional visits to Norfolk, Va., and that he also anticipated seeing President Johnson's Inauguration in Washington, D.C. . . . Our members are now assured that classmates' wives are diligent readers of our Review column, as evidenced by a gracious letter from Mrs. **Arthur B. Allen, II,** stating that Arthur would arrive at his 85th milestone on April 25. He is also enjoying good health and wishes all his classmates "aussi pariels santé." . . . On reading a recent account in The Review concerning the early student program at the Institute, your secretary recalled that in our freshman year we enjoyed a change from the classroom and lab to the shop work atmosphere, where we learned the skill of carpentry, with later advanced work in power lathes for wood and metal turning. This course has been of inestimable value to us in remaining years and the source of much enjoyment.

A very cheerful letter from **Scotty Morse, I,** arrived from Minneapolis. His customary energy and his interest in our Class News has not been reduced. He bestows much praise on my reports in endeavoring to continue despite the lack of news from our many classmates, who could also write to me about their activities. He enclosed a news item from the Minneapolis News, extolling Purdue University. Purdue stands as 21st choice in a student survey involving 854 colleges and universities. The most favored school among the educational elite was M.I.T. . . . Our happy birthday greeting goes to Miss **Lillian Gleason,** VII, for her 85th on February 10. . . . Miss **Mary N. Phillips,** VII, has a new address: c/o Earle Hayas, 32 Pleasant Street, Sharon, Mass. . . . **George B. Seyms,** III, has the new address of 6 Hawthorne Lane, Rosemont, Pa. . . . **Omar S. Swenson**'s home address is 174 Centre Street, Concord, N.H. . . . **Robert R. Jordan,** II, of Prouts Point, Maine, passed away November 24, 1964. . . . **Harold Osborn,** VI, 11 Grumman Hill Road, Wilton, Conn., passed away August 29, 1964, and no information was available.—**John J. A. Nolan,** Secretary, 13 Linden Avenue, Somerville, Mass.; **Augustus H. Eustis,** Treasurer, 13 State Street, Boston, Mass.

'04

According to the Old Farmers Almanac yesterday was groundhog day and since it was bright and sunny all day the groundhog must have seen his shadow and returned to his bed for another six weeks of sleep. Some mornings we can envy nature's weather man. Class news as usual is very scarce. The only item of importance is the passing of one of our few remaining coeds, **Mrs. Jasper Whiting,** who died at her Boston home on January 28. Memorial services were held at the Arlington Street Church on Monday, Feb. 1. Mrs. Whiting was active in many Boston organizations. She and her late husband travelled extensively and represented the United States at Queen Victoria's Jubilee in India. . . . As further evidence that M.I.T. is growing, the headquarters of the Alumni Association will be moved to new quarters in the remodelled Daggett building at Kendall Square. We shall miss them from Building 1.—**Carle R. Hayward,** Secretary, 120 Beacon Street, Boston; **Eugene H. Russell, Jr.,** Treasurer, 82 Stevens Road, Needham.

Happy Birthday

During April one alumna will be 95 years old; seven alumni will celebrate their 85th birthdays; and 5 will mark their 80th years.

April, 1870—ALICE H. POUGH, '92, on the 21st.

April, 1880—CHARLES K. FLINT, '01, on the 1st; HARLEN M. CHAPMAN, '02, on the 4th; GEORGE N. TAYLOR, '04, on the 7th; THEODORE H. TAFT, '01, on the 8th; J. WALLACE TAYLOR, '05, on the 11th; ARTHUR R. NICHOLS, '02, on the 15th; and ARTHUR B. ALLEN, '03, on the 25th.

April, 1885—ERSKINE P. NOYES, '07, on the 4th; CALVIN P. ELDRED, '11, on the 13th; ROBERT C. LATIMER, '09, on the 24th; JOHN T. WRINKLE, '06, on the 25th; and RALPH L. DYER, '06 on the 28th.

'05

I have just written to **Gib Tower,** XIII, welcoming him into the 1905 Octogenarian Club and expressing the hope that I may be welcoming him into the Nonagenarian Club 10 years hence. No one has challenged my statement in the February issue, namely that Gib was the youngest member of the class. Therefore, I am declaring membership in the '05 O.C. closed. . . . Professor Vivian, '39, Chemical Engineering Department at M.I.T., writes asking whether I knew about the meeting of the American Institute of Chemical Engineers held in Boston recently, at which **Warren K. Lewis** was given highest honors and acclaim. I had heard of it in a round-about way (Doc's modesty would not allow him to broadcast it), but it was impossible for me to get down to it. I am sure you would be interested in this quote from Professor Vivian's letter:

"As you probably know, Dr. Lewis is generally considered to be the father of modern chemical engineering. The occasion took the form of an 'Evening with Doc Lewis' on Monday, December 7, 1964, at the Hotel Statler in Boston. Jim Donovan, '28, Artisan Industries, Inc., a past chairman of the Boston section of the A.I.Ch.E. was master of ceremonies. Among the several hundred in attendance to honor Doc were a large number of his former students. A high spot of the evening was Doc's account of the origin, development and growth of modern chemical engineering. The evening was indeed a most stimulating one."

Early in January I had written to **Len Cronkhite** about the 60th Reunion. Eventually that letter reached him in Tucson, Ariz., from which point he phoned me (on the very day my thermometer had reached 22 degrees below zero) to tell me that he and Bernice were basking in the sun, poolside, at Motel El

Corral, which from the picture on the letterhead seems like a very good place to bask. In a following letter, Len writes very enthusiastically about "a certain climatic magic, special to Tucson, which differentiates it from other parts of Arizona." Hark, hark, ye Phoenicians, **Robbins** and **Allen.** Maybe you can debate it at the reunion in June. You will have had all the details of the 60th, plus a question by the time you read this, but the date is June 12-14, which includes the Alumni Day program. . . . **Herman Gammons,** II, makes up for lost time by writing a five-page history, which I wish I could publish in its entirety. He is still on the job every day as a member of one of the larger patent attorney firms in Boston. I am, however, quoting certain sections, which I believe his classmates, particularly in Course II will enjoy: "As to myself I have perhaps a rather unique position with respect to M.I.T. since both of my sons and my son-in-law are graduates of the Institute, my oldest son of the class of '33; my youngest son of the class of '35; and my son-in-law of the class of '39; and to make it still more interesting all of us are professionally engaged in the practice of patent or trademark law. Each of my children has three children, so that I have nine grandchildren and my daughter's daughter has two children, so that I have two great-grandchildren. I still carry on my work as usual, rising at 5:45 every morning, travelling 17 miles from where I live to Boston, and getting into my office about 8:20 and working until approximately 5:00 and still find my work interesting, particularly as it brings new developments in many fields to my attention from day to day. My oldest son is one of my partners in this old patent law firm of Roberts, Cushman and Grover. I have a small cottage on the shore of Buzzards Bay in the town of Wareham and in the summertime commute from there to Boston, very seldom taking a vacation of any substantial length. My only real recreation, strange to say, is that of taking dancing lessons which I have done for many years, one per week. I believe that it is an excellent thing for physical health and also to prevent one from getting old in mental attitude. You would be surprised to learn how many men of retirement age follow this same practice. In addition to taking a lesson once a week, the studio, where I take the lesson, has a party once a week for students, where students can come together and have a social hour and dance together if they care to. I have made some very pleasant acquaintances in this way and in varied fields, among them stock brokers, professors in college, and doctors. Even though there are not too many 80 years old as I am, there are many with white hair or bald heads who find enjoyment in this pastime. However, I would wish to warn anyone contemplating entering this field to leave the checkbook and wallet at home when they enter the studio for there is a constant and insistent pressure to buy more lessons which, of course, is what the studio has to sell. My wife died something over 30 years ago and I have not remarried, but in the interval my daughter has lived either with me in Natick, or close by." Some of our other dance enthusiasts, **Prince** and Ethel **Crowell, Hal Robbins,** etc., should get a kick out of this.

Chester Allen, I, whom the 1961 Register has listed as Professor Emeritus of Civil Engineering at Michigan State University, retired with Mrs. Allen after 50 years of activity to the "little town of Olivet, Mich., 1,200 population, to enjoy life." He has taken over the office of Justice of the Peace, "which gives me something to do and to think about. We have six children between us all grown up and off on their own." Doubtless many '05 men have taken on unusual activities in their retirement. Why not tell us about them? . . . You have doubtless received a communication from **Bob McLean,** our able and persevering class agent, reminding us of one of our duties in our 60th year in helping the class record as to percentages of donors. While we probably cannot increase our percentage as to amount of contribution, our bit can show the old '05 spirit in the number of givers. . . . I noticed in the obituary column of the Boston Herald that **Albert C. Armstrong,** III, of Brookline, Mass., died on February 2, 1965. In the 1902 Technique I find that he was with us in 1902, but no further record.—**Fred W. Goldthwait,** Secretary, Box 32, Center Sandwich, N.H.; **Gilbert S. Tower,** Assistant Secretary, 35 N. Main Street, Cohasset, Mass.

'06

After his holiday safari east, **Guy Ruggles,** III headed west from Boston's Logan Airport on January 12, and had an uneventful flight home to Phoenix. Guy wrote that he was busy with accumulated mail and that he figured for every day he is away it takes two days to catch up. The outdoor temperature there was 74; he could hear a covey of quail nearby, and had roses in bloom (mid-January). The day he wrote our top temperature was 24, up from 7, and it began to snow, leaving another winter wonderland. . . . Every now and then a secretary's heart is gladdened because an alert and co-operative classmate—or someone of another class—spots and sends a news item that the secretary would not otherwise get. **Will Farley,** I, did just that and said in his note: "I thought you might be interested in this well-deserved tribute to **Howard Barnes.** Since Howard retired and came back home to live, he has been very active in town affairs and in a most constructive way. The town meeting and the town will miss him." The tribute was an editorial in the Old Colony Memorial, which dates from 1822 and is now a consolidation of several weekly newspapers in and around Plymouth. Under the heading "H.B. Hangs Up His Gloves," the editor laments: "It was something of a shock to learn that Mr. Howard Barnes will not be running for re-election to town meeting. The town has depended heavily on Mr. Barnes to keep the representative town meeting form of government alive, year after year." Howard was on the original committee which brought about a change-over, in Plymouth, from the old N.E. form of open town meeting to the limited or representative form, being the one who argued for the change before a committee of the state legislature. Then it was his custom, the editor said, to anticipate vacancies and to persuade people to run for town meeting member. I'd like to quote the whole editorial but will add only the last paragraph, being sort of a sermon I think: "Town meeting without Howard Barnes rising to take the floor will truly not be quite the same. His approach was individualistic; he said what he thought and he thought as he pleased. This spirit is indispensable in our democratic system, its very lifeblood. It takes a certain courage and self confidence to get up in front of one's fellows and spell out one's ideas. But the impulse to do this is the prime mover in representative government. Mr. Barnes had these qualities in abundance." How many other Tech men have given years of devoted civic and community service, often just for the satisfaction derived therefrom? Howard Parker Barnes, I, S.B., had only one connection, I believe, from 1906 until he retired in the early 1940's and that one connection was with the Board of Water Supply, City of New York.

In the December notes I reported the death in Charlestown, N.H., of **Sarah Emeline Potter** but gave no date. The information I said, had come from the Women's Association of that town. In trying to get more information I wrote to the town clerk who replied that they had no record of her death. Then I tried Miss Walker of the Alumni Office and learned that the Women's Association was a group of M.I.T. gals. The next step was to contact the corresponding secretary of that group, Mrs. George B. Swift, '41, S.B., who was most co-operative, checked her records, and reported that Miss Potter had died April 8, 1963, in her 98th year. . . . In the February notes I reported the death of **Jane Boit Patten** on December 4, but the date should have been December 6, my mistake. Since that report a couple clippings have arrived containing more information about her. After teaching biology and botany at Simmons for 11 years she spent a year with an American expedition to Crete, on which she served as a botanist. It was on her return that she acquired the property, Elmbrook in S. Natick "where she was a horticulturist." Miss Patten was in her 96th year. . . . **Charles Lyman Anson,** XIII, S.B., of 407 N. President St., Wheaton, Ill., died on December 23, 1964, as reported to the A.O., by Mrs. Anson. He was born March 23, 1884, in Milwaukee, was a member of the Naval Architectural Society being vice-president in his senior year, also a member of the Wisconsin and Technology clubs. His thesis was: "Rudder Experiments on the Steam Launch Relief," with C. F. Edwards. For eight or 10 years he was in charge of manufacture for the Northwestern Gas Light and Coke Company in Oak Park, Ill., but by or before 1920 he

had become a magazine writer in Wheaton. Then he was successively reported as a writer and an author. We have no information as to the nature of his writing until, in 1958, Dodd-Mead as publisher, copyrighted a book entitled "Skeleton Coast," by John Marsh and Lyman Anson, library of Congress Number 58-6827. I have the book and in the foreword L.A. says—"The facts in this book were gathered in 1944 by John H. Marsh, a Cape Town journalist, from interviews and official records. The result was a slender historical account of one of the war's remarkable shipwrecks on a far coast." The book jacket describes the locale: "Just north of southwest Africa's famed diamond fields lies Skeleton Coast. For 500 miles this insidious strip of desert coastline meets the full sweep of the South Atlantic. It is one of the most desolate regions on earth. It is the last place on the globe where one would choose to be shipwrecked. Yet here, during the last war, a sizeable British ship met disaster." It was on that Skeleton Coast that the people from that freighter were "suddenly marooned on a strip of hell." L.A.'s book tells what they went through before most of them were rescued. A note of sympathy was sent to Mrs. Anson. . . . Address changes are: **George R. Guernsey,** I, to 115 Spring Valley Road, Wilmington, Del. 19807; **Karl F. Juengling,** II, 18710 East Shoreland Drive, Rocky River, Ohio 44116; **Paul Lincoln,** III, who has, after all these years, moved across the line from Nelson, British Columbia, to Newman Lake, Wash., Box 125, on Route 1—**Edward B. Rowe,** Secretary-Treasurer, 11 Cushing Road, Wellesley Hills, Mass. 02181.

'07

A letter from Gerald C. Hudson, son of **Ralph Hudson,** VI, from Fort Myers, Fla., gave me some information about Ralph which I have been unable to obtain through correspondence with him. I quote: "My father, Prof. Ralph G. Hudson, of the Class of 1907, has not been too well since the death of my mother in 1962. He now lives with us here, where my wife and I try to make a good home for him; and I do what I can to assist him with his correspondence." It seems that, in moving from Massachusetts to Florida, the moving van containing the Hudson household goods was destroyed by fire. Ralph valued highly the photograph of the '07 men taken at Oyster Harbors at the time of our 50th Reunion and has asked for a duplicate of it. This I will obtain from the photographer and send to him. Change his address on your address list to Coral Point, 101 Fairview Avenue, Fort Myers, Fla. Also, I suggest that we each send a postcard to him. . . . Two additional changes of address to make: **Frank S. MacGregor,** VIII, 2401 Pennsylvania Avenue, Wilmington 5, Del., and **Otis G. Fales,** II, 15 Dyatt Place, Hackensack, N.J.

The Boston Herald of February 3, 1965, carried a column on the obituary page telling of the death of **Robert Rand,** II, 7 Prentiss Lane, **Belmont,** on Tuesday, February 2. He was a former Naval Reserve Commander and served in both world wars. Bob's business life was spent in the Boston office of the Bethlehem Steel Company. He leaves his wife, two married daughters, four grandchildren and two great-grandchildren. Bob was one of our most faithful members in the Boston district, and his presence at our dinners will be greatly missed. **Dick Ashenden** and **Tom Gould** attended the commital services at the Newton Cemetery Chapel on Thursday, February 4. . . . The March notes carried an item on the death of **Harold C. Libby,** I. I had a letter of thanks from Mrs. Libby in which she expressed her gratitude for the message of sympathy, which I had extended to her from the class. . . . The Alumni Office sent to me a clipping from a New Bedford paper telling of the sudden death of **William H. Martin** at his home in Mattapoisett on December 4, 1964. His widow is his only survivor. Most of us who attended the 55th Reunion at Oyster Harbors in 1962 will remember the sudden appearance of a man with a very full white beard. No one recognized him until he was introduced. It was Henry. He attended Alumni Day 1964 last spring still wearing the beard.

Charles E. Baker, XI, answered my 80th birthday letter to him. Charles lost his wife seven years ago after a very happy marriage of 47 years. He has five children, 18 grandchildren and three great-grandchildren and makes his home with an elderly widowed sister. Two of his sons work in the Sales Company which Charles started 14 years ago in East Point, Ga., at the time he lost his eyesight. His other son is a civil engineer here in Boston. Both daughters are married. One lives in Boston and the other, in Atlanta near Charles. He mentioned the wonderful help that a seeing eye dog has been to him. . . . The cards canvassing the class were mailed the first week in February. About 30 replies have been received indicating that we will not hold a Reunion this coming June. Some of the cards contain bits of news. . . . Gen. **John Mather,** VI, whom I called on in Cotuit last fall, had a stroke shortly after that and has been in the hospital ever since. At present he is quite incapacitated. . . . Mrs. **Parker Dodge** wrote that Parker had a stroke on November 11, 1964, and cannot write. He is, however, making a slow recovery. He is at home at 21 W. Kirke Street, Chevy Chase, Md., and would appreciate "get well" cards.

Jim Barker found some additional literature relative to **Clarence Howe** telling of his being made a Guggenheim Medalist for 1954. The article gave a very fine, although brief, account of his life and work as a Canadian citizen. It was titled, "Architects of the Age of Flight." I quote one paragraph: "Recognizing the vital importance of air transportation to Canada—where by the early thirties more air freight was being carried than in any other country—and the need of interurban and transcontinental air services, Howe introduced the Trans Canada Air Lines Act, which passed in 1937. Having already initiated the provision of ground and operating services, he pressed forward with all the resources at his command. To focus public attention on his favorite project he made a dawn-to-dusk flight from Montreal to Vancouver in July. By 1940 regular transcontinental passenger services were operating. With

Deceased

KARL A. PAULY, '96, November 9
EDMUND C. LITTLE, '98, December 12, 1963*
W. FRED DAVIDSON, '01, December 29*
PHILIP W. MOORE, '01, January 7*
JOSEPH W. BALLARD, '02, January 19*
HAROLD OSBORN, '03, August 29*
MRS. JASPER WHITING, '04, January 28*
ALBERT C. ARMSTRONG, '05, February 2*
CHARLES LYMAN ANSON, '06, December 24*
WILLIAM H. MARTIN, '07, December 4*
ROBERT RAND, '07, February 3*
EVERETT E. TURKINTON, '07, December 27
LOUIS BARNETT, '09
JAMES S. COX, '10, December 5*
JOHN B. MYRICK, '10, April*
R. BRUCE BROWNLEE, '12
ABRAM J. FREEDMAN, '12, January 16
FRANK J. OSBORNE, '12, January 23*
EDWARD M. MASON, '12*
JOHN R. PARK, '12, December 31
HAROLD B. BEEBE, '13, February 5*
WILLIAM D. FOLEY, '13, December 14*
LUTHER J. RENFREW, '13, January 25*
JOHN TURNER, '13, January 29
J. J. R. BRISTOW, '14, January 29*
CLAIRE WILLIAM RICKER, '14, January 19*
CLYDE P. ROSS, '14, January 9*
CARLETON W. LOVELL, '15, January 30
RUSSELL LOWE, '16, December 24*
HAL NEILSON, '16, December 20*
WILLIAM P. BEALER, '17, December 17*
RUSSELL A. WYLDE, '17, December 26*
EDWARD ESTY, '18, November 23*
ROSCOE H. HYSOM, '19, January 22
ADRIAN MARRON, '20*
HARRY JONAS ABRAMS, '21*
CHARLES STARBUCK, JR., '22
HERMAN D. BEAUDET, '23, June 28*
ROBERT J. HULL, '23, February 18*
ALFRED M. PERKINS, '23, January 13*
ERNEST H. FRENZELL, '24, January 15*
J. HENRY LEON, '24, May*
NOEL L. FLINT, '27, November 22*
WILLIAM H. REED, '27
ARCHIE PROTOPAPAS, '28
WILLIAM R. MACLEAN, '29, December 21*
RICHARD C. HUGGARD, '30, January 10*
WILLIAM H. KEITH, '33, January 17*
HAROLD P. TOWLE, '33, April 27, 1964*
DAVID G. GREENLIE, '35*
JOHN J. FORD, '38, August 29
NICHOLAS V. MIHAILOFF, '39, March 8, 1964
WILLIAM L. JACKMAN, '49, September 27*
WILLIAM AHLBORG, '51, December 4*
MORRIS J. LEVIN, '52, February 6
WALTER F. MORTON, '52, November 10
PETER C. BULKLEY, '55, November 23*
ROBERT T. MCWADE, JR., '55, December 12*
STEVEN A. BRAMBRUT, '59, March 14, 1963

*Further information in Class News

the outbreak of war, Howe became Minister of Munitions and Supply, and directed the vast industrial war effort. He provided more than 100 ground installations and thousands of aircraft for the British Commonwealth Air Training Plan, developed an industry which produced over 13,000 aircraft, the greatest per capita output in the free world, and built great aerodromes for ferrying bombers overseas and for defense units on the coasts." He later sent me another newspaper report on the success of C.D. Howe and his company in revolutionizing the Canadian grain handling problem in the 1920's. These accounts will be filed in our archives.

Arthur O. Christensen, III, of Beaufort, S.C., and **Kenneth G. Chipman,** III, of Ottawa, Canada, developed a friendship during our college days in the mining engineering course, which has developed during the ensuing years. Recently, Ken wrote to Arthur who shared with me some of Ken's activities down through the years. He gave 42 years of his life to the Department of Mines and Technical Surveys in Canada, retiring 15 years ago. While at M.I.T., he spent three summers underground in the coal mines of Canada and, upon graduation, decided he liked the surface better and started work in Victoria, British Columbia. The next year he was back in Ottawa with the Geological Survey. He liked the city, the work, and the associations; and this has been his home down through the years. In 1912, in the mountains of British Columbia, he had an encounter with a grizzly bear and two cubs. He is still introduced as "the man who was chewed by a grizzly bear and survived." In 1913 Ken went to the Arctic for three years. It was 15 months after the outbreak of World War I before he heard of it. He tried to get into active military service upon his return from the Arctic, but the department refused to release him. In 1941 he became chief topographical engineer. During 1947 Ken spent two months in England and on the Continent in study. In 1949, when he retired, he was able to report that his department had increased its production 10 times, with an increase of appropriation of five times, and of staff, four times what it was when he took over eight years previously. Ken married in 1916 and had one son who served with much distinction in World War II in the Royal Navy. He has two grandchildren—a girl in her final year at college and a boy in third year high school. This past year he had his first serious illness, flu with virus pneumonia, and then two surgical operations. Recovery has been slow, but he writes:

"I am all right now and rather enjoying the quiet contemplation and review of my past life." Chippy, as we know him, came from Ottawa and attended our 48th and 50th Reunions at Oyster Harbors. I called at his home in Ottawa several years ago but had the misfortune to find he was not at home.

Arthur O. Christensen, III, believes in advertising and sent me one of the automatic pencils that he used to say Merry Christmas to his clients in Beaufort, S.C., where he has a lively realtor and land surveyor business. Thanks, Arthur—**Philip B. Walker,** Secretary and Treasurer, 18 Summit Street, Whitinsville, Mass.; **Gardner S. Gould,** Assistant Secretary, 409 Highland Street, Newtonville, Mass.

'10

I regret to report the deaths of **James S. Cox** on December 5, 1964, and of **John B. Myrick** in April, 1964. . . . **Carl J. Sittinger** writes: "We are still in good health and enjoying retirement in New Hampshire. Leaving early next week for 'Fun in the Sun,' Sarasota area, and returning early in March." . . . **Albert K. Huckins** had the misfortune to lose his son; he writes as follows: "Please excuse the delay in replying to yours of 10/15/64. My younger son died suddenly in October. I spent most of November with his wife and the two grandchildren in Illinois. Life goes on as usual in Rockport. I am well and busy, as time flies by. Regarding the 55th reunion, I'll have to wait and see how things are with me in June before deciding." We all sympathize and send our condolences to Al. . . . **Ralph W. Horne,** president of Fay, Spofford & Thorndike, has been honored by the Boston Society of Civil Engineers by election as an Honorary Member of the society by the Board of Government. This honor is certainly due Ralph, who has been a very active member of the B.S.C.E. for many years. . . . I had a short note from **Charles F. Robinson,** who states he has retired and is still living in the same house in Arlington as for the past 48 years.—**Herbert S. Cleverdon,** Secretary, 120 Tremont Street, Boston, Mass.

'11

William B. Warner, I, whose death was reported in last month's news was born in Titusville, Pa. He prepared at the Titusville High School and Haverford College. Bill was active in undergraduate affairs and was a member of the Class Day Committee. He married Kathleen Carrington in November 1912, at Riverside, L.I. They moved to Nowata, Okla., in 1923 from Vancouver, B.C. Over the years Bill has held various executive assignments in the Warner-Caldwell Oil Company of Nowata as late, according to the last report, as 1961. He was a Veteran of World War I. Other activities included several terms as Mayor of his city, founder of Nowata Boy Scouts, service on civic boards, and he was an anonymous supporter of worthy causes and individuals. He was also a member of the Nowata Sunset Masonic Lodge. Survivors include his wife, Kathleen, and two sons, Alex H. of Boulder, Colo., and John K. of Denver. A son William was killed in the service. . . . The December, 1964, edition of the Boston Sunday Herald ran a three-page well-illustrated spread under the heading "Living Around Antiques" and the subtitle "The Coburns have Furnished Newton's Oldest House With Museum Pieces." The **Coburns** are our classmates **Bill** and his wife Pamelia. The house, dating back to about the year 1700, was acquired by the present owners about 1919 and expanded in 1930. Gloria Gould goes on to say: "Ownership of the early homestead created a consuming interest in Early Americana, and has kept Bill Coburn on the antique trail for the last 45 years. Amid fair play—and some foul—he has succeeded in out-searching and out-maneuvering buyers for leading restorations such as Rockefeller's Williamsburg. His collection is now rated one of the finest in the country and is courted by heads of leading museums."

A full-page spread in a Sunday edition of the Arizona Daily News featured an article by Charlotte Cardon on **Mrs. Robert Spencer (Margaret Fulton,** IV) with photographs of her Rancho de Las Lomas in Tucson. Margaret prepared at Bryn Mawr and is quoted as saying that it was only after several years of pining for some activity that her parents allowed her to enter M.I.T., the only female in design. She married an artist of some distinction and she herself eventually became a professional artist. They had two daughters and for many years lived in Paris. In the late Thirties, then widowed, Margaret went to Arizona and bought a chicken ranch in Tucson. On the 190-acre tract close to the Tucson Mountains, according to the article, she began what became a cluster of 16 buildings to be named Rancho de Las Lomas, which she ran for guests and as a Swiss finishing school for girls. At 82, she starts the day at her typewriter in the study, but at mid-morning is outdoors checking details on a new house she is completing close by.—**John A. Herlihy,** Treasurer and Acting Secretary, 588 Riverside Avenue, Medford, Mass. 02155.

'12

Word has just been received of the death of **Frank J. Osborne** on January 23 at his home in East Orange, N.J. Frank was health officer for his city for 37 years before retirement. He was a member of the New Jersey State Board of Health from 1943 to 1947 and was formerly president of the New Jersey Health Officers Association and the New Jersey Health and Sanitary Associations. He was formerly executive secretary of the New York Society and concerned with the control of cancer. Frank leaves his wife, two daughters and a son, eight grandchildren and a great-grandchild. . . . **R. Bruce Brownlee,** II, of 49 Walker Avenue, White Plains, N.Y., passed away recently. Unfortunately, no details are available. . . . **Edward M. Mason** passed away at his home 287 Gardner Road, Ridgewood, N.J., from a heart attack. Shortly after graduation Ed went with the Standard Oil Company of New York and for many years worked for them in India. In 1952 he was made general manager of the Lubricating Oil Division of the Standard Vacuum Oil Company. For many years he had been active in the West

Ridgewood Presbyterian Church and was chairman of the board of trustees. His many civic activities are too numerous to mention but since his retirement he has been extremely active. He was a member of the Ridgewood Country Club and Larchmont Yacht Club as his favorite pasttimes were golf and sailing.

Fred H. Dierks leads a very active life as head of the Dierks Forests, Inc. The parent company includes a Pine Lumber Division, Wood Pressure Division, Pressure-treating lumber, Mill Work Division, Engineered Board Division, Gypsum Division and the International Division. The Dierks Paper Company includes a paper division and a multi-wall bag division. The empire also includes two railroads and total employment is over 3,000. . . . A good letter from **John Noyes** tells of a 50th wedding anniversary celebration which was arranged by their children. Three days were spent at the Kings Inn at Clear Lake, Texas. He included a photograph which included their children and grandchildren, truly a wonderful group. . . . **Albion Davis** has taken over the arrangements for our interim reunion to be held on campus on Class Day this year. We will be living at the new women's dormitory and you will be receiving word from Albion shortly. Reserve the weekend of June 12 to 14 for this effort.—**Frederick J. Shepard, Jr.,** Secretary, 31 Chestnut Street, Boston 9, Mass.; **John Noyes,** Assistant Secretary, 3326 Shorecrest Drive, Dallas 36, Texas.

'13

On with the show. We have heard again from Mrs. Harris, the Manager of the Coonamessett Inn. She is pleased that the Class of 1913 will hold its 52nd Reunion at her Inn. Yes, the room rates are the same as in 1956. Instead of a flat rate for meals, we have agreed that each classmate and guest should order a la carte, so that we who are now dieting may regulate our food intake as well as our monetary output. Thus you may be as luxurious or as penurious as you desire. Your capacity for sustenance will be your responsibility. The real crux at the moment is: Will you attend our 52nd Reunion June 11 to June 14 or major part of that period? . . . Time marches on and very sadly we must report the disagreeable news as well as the pleasant. On Monday afternoon December 14, **William D. Foley,** 76, of 76 Louders Lane, Jamaica Plain, Mass., died in his home after a brief illness. He was treasurer of the D. J. Foley Company, a Roxbury fur dressing firm for several years. Born in Roxbury, he graduated from Boston English High School and from Harvard College in 1911. He studied science at M.I.T. He was a member of the executive committee of the Boston Fur Club. He leaves his wife, Grace (Murray); two daughters, Mrs. Mary Jane Moody of Canton, Ohio; and Mrs. Nancy LaDue of Brighton; and three sisters, Mrs. James A. Clark of Brookline, Gertrude Foley of Brookline, and Mrs. Thomas H. Bresnahan of Chesnut Hill. A solemn requiem Mass was sung at 10 A.M. Thursday in St. Thomas Aquinas Church, Jamaica Plain. Burial was in Holyhood Cemetery. . . . Again we are the bearers of sad news. We quote from the tribute of the Steubenville Herald-Star of Steubenville Ohio. **"Luther J. Renfrew,** 74, of 1206 Pennsylvania Avenue, died Monday, January 25, 1965, in his home. Mr. Renfrew retired in 1958 from Weirton Steel Company, where he was assistant superintendent of the coke plant. He was a member of Fifth Street Methodist Church. Mr. Renfrew was graduated from the Massachusetts Institute of Technology. He was a member of Lodge 45, F. and A.M. and various Masonic organizations. His wife, Mrs. Jessie Oliver Renfrew, died in 1952. He leaves two sons, James O. Renfrew of Pittsburgh, and Robert L. Renfrew of New Canaan, Conn.; two sisters, Miss Marion Renfrew, and Mrs. Bernice Freeman, both of Boston, and five grandchildren." We shall miss Luther, but we are very much pleased that he celebrated our 50th Reunion in June, 1963. . . . Also, we noted in the Boston Herald, that **Harold B. Beebe,** husband of Mary C. (Plunkett) of 53 Wildwood Street, Winchester, Mass., and brother of Mrs. Barri M. White of Swampscott, died February 5, 1965. Very few details were given and we shall gladly publish further items in our notes if any of our classmates can supply more extensive information. Those who were on the 1913 Football Squad in 1909 probably remember that tall, handsome fellow who played tackle and we believe that he transferred to our neighbor, Harvard. . . . Your scribe has been working diligently for some years with the Canton Industrial Development Commission and several municipal agencies to induce various outstanding industries to benefit from the advantages of operating in Canton with the many natural resources which may be found here—all utilities including supply of water, transportation, labor, and proximity to M.I.T. and other New England scientific institutions, as well as the bordering electronic and nuclear organizations including the national project NASA, now operating in Cambridge. After several months of intensive study and on the advice of several consultants, the Canton Commission has purchased space in the Technology Review and our latest four-page brochure was in the March issue.

Once again it was very gratifying to hear from Marguerite **Kelly** reporting on that eventful day when she and **Prescott** celebrated their 50th wedding anniversary with their children and some of their grandchildren. A very fine newspaper photo accompanied Marguerite's letter, which showed this remarkable couple and their children, George Kelly and Cynthia Meade. Wonderful, my dears, we shall be looking for you in June and hope that you can arrange to include the reunion in your Massachusetts itinerary. . . . As usual, at this time of the year, we received a postal from **Dave Nason** portraying lazy life "Midday in Barbados." What keeps you going, Dave? The fish or the rum? . . . **Ralph Thomas** writes "Sorry—I can't make it in 1965." . . . **Earle Lincoln** states: "Very sorry not to be able to attend the get-to-gether in June." . . . **Allison Butts** explains: "Sorry, can't make the reunion this time." . . . **Daniel Ricker** expects to attend the 52nd Reunion. . . . Change of address: **John B. Woodward, Jr.,** 17 Museum Drive, Newport News, Va.; **James M. Beale,** 509 Neponset Drive, Venice, Fla. 33595; **Frederick H. Kennedy,** 1304 Carew St., San Dimas, Calif. 91173. . . . Well, my lads and lassies, we shall be looking for you in June.—**George Philip Capen,** Secretary and Treasurer, 60 Everett Street, Canton, Mass.

'14

Clyde Polhemus Ross passed away on January 9, 1965. We enjoyed his company together with his wife Ruth at our reunion last June. After graduation with our class, he spent another year acquiring a combined master's degree from M.I.T. and Harvard. He then spent a year or two with the Old Dominion Copper Company in Globe, Ariz. From 1917 on, he progressed through various positions with the U.S. Geological Survey. During much of this time he was located in Washington, D.C., but his work took him to Santa Domingo and Bolivia on occasion. He was a Fellow of the Geological Society. His recent home was in Golden, Colo., Route 4, Box 155A, not far from the Federal Center of the U. S. Geological Survey in Denver. . . . Another recent death was that of **Claire William Ricker,** Course VI, who passed away on January 19, at his home in New Orleans at 606 Clairborne Towers. He was, until his retirement a few years ago, Professor of Electrical Engineering and Head of the Department at Tulane University. After graduation he spent an extra year and acquired an M.S. at M.I.T. and an M.E.E. degree at Harvard. He spent the war years of 1915-1916 at the Western Electric Company then became, successively, instructor and assistant professor in Electrical Engineering at M.I.T. In 1926 he moved to North Carolina State for two years, then on to Tulane where he remained until his retirement. He was a Fellow of the Institute of Electric and Electronic Engineers and had many teaching texts to his credit.

James Jefferson Rucker Bristow, whom we saw at our 50th Reunion, died on January 28 in Dunedin, Fla., at State Road 590, Safety Harbor, where he lived with his wife, the former Frances Pendleton. He was born in Georgetown, Ky., and had a degree from George College before entering M.I.T. After graduation he spent several years with the Aluminum Company of America and the Proctor and Gamble Company in Kansas City and Cincinnati. Later he moved on to Florida and was soon involved in matters connected with the citrus industry, its essential oils and concentrates. His vital contribution in this field dates to 1937 when he devised the low temperature, vacuum boiling process which preserved the flavor

such miserable and uncomfortable climate and such queer and quaint cultures and customs. First, I wonder why he did it and second why he is still alive. What a guy! He ends it: "The other night I took over an English Conversation Class in Tokyo, due to the absence of the teacher who wants to give it up. If I could prove to be a good enough teacher to get a few classes, I might spend six months or so here. If not, I shall probably move on to some other place.—No plans yet." Good luck to him—he'll need it. Then, two weeks later we received the following letter directly from him: "I am now living in a house with a young Englishman in a small place about one hour's ride from the center of Tokyo. Your Christmas card reached me after I returned from a three weeks' tour of Southern Japan—a boat trip the length of the Inland Sea, in the vicinity of one of the volcanic areas of the country. I visited many hot springs and part of Christmas Day I spent down inside the crater of an active volcano which was continuously spurting high pressure streams of steam and sulfurous gases. I visited Hiroshima and spent two days at a Shinto religious festival. I stayed many nights in Japanese style inns quite different from western motels. Give my greetings to all Classmates at our 50th Reunion. I certainly would like to be with you but I shall not be home so soon. I plan to spend June in Japan, then to the South Sea islands, return to the southern tip of India and explore the west coast of that country. Then on to Delhi to get my car (which I left up there some time ago for repairs), if I can successfully fight the red tape of the Indian government to get it out of impoundment. When the cool weather comes, I'll fight my way across the Middle East desert. I want to explore more of Italy and then, in the season, go trout fishing in Austria, Germany and the Pyrenees and then spend the winter in Spain. Next year (1966) I'll go back to southern Spain for another winter and then go home in the Spring for trout fishing and tennis. I have not yet seen a place I like as well as home. Of course, this program could change on very short notice, as I wonder about East Africa. Regardless, my regards to all Classmates and my very best to Fran and you." Well, Classmates, I leave you to judge the guy, remembering he's our age. I am at a loss what to say! . . . So, only three months to wait for our BIG 50th! I'll be seeing you there, I know. Meantime, how about paying your class dues to "help Azel."—**Azel W. Mack,** Class Secretary, 100 Memorial Drive, Cambridge, Mass. 02142.

'16

How many Class Presidents attended the seventh Triennial International Congress of the Professional Ski Instructors Association in Bad Gastein in January as guests of one of the Professional Ski Instructors of America, Paul Valar? Only one, is what our records show. And that one is none other than our own ski-lovin' **Ralph Fletcher!** And when he goes on trips like that: Germany, Austria, Switzerland, he sends to people like **Cy Guething** and us the darndest post cards, as for example this time, one of a tippling bear with bleary eyes over the caption "Ohne Wein und Liebe." Ralph says Paul Valar had a team of six ski instructors from various parts of the United States who put on a demonstration of the American ski technique which excited a great deal of interest on the part of delegates attending from 22 different nations. Says Ralph: "It seems there is a good deal of ferment going on in the technical side of the skiing profession. A great deal of argument not only about how to do things but why certain body motions work; in other words, what are the physics of the thing. So far as I am concerned, I am particularly interested in having them work before I hit a tree or the deck." Ralph notes that their baggage got misdirected, and "then there was the incident when the elevator in the hotel got stuck between floors with the three of us and four big Germans. Fortunately there was a telephone in the elevator and after a few minutes wait we were freed. After that the good things began happening. . . . We had a very enjoyable Campari and fork breakfast at Salzburg." All this while we here were trying to keep the snow off the driveway!

We regret to report the death of Colonel **Hal Neilson** of Lexington, Miss., on December 20, following a long illness; burial was in Arlington National Cemetery. Hal came to Tech with a B.S. from Mississippi A. & M. He retired from military service as a colonel after 31 years. His brother, the late Edwin Tye Neilson, was for years mayor of Lexington; his father died early, and during Hal's younger years, 1908-1912, his stepfather, the late Edmund Favor Noel, was governor of the state. The Neilsons were at the 45th reunion, and we were so hoping for more of Hal's delightful stories of the South at the 50th. Surviving is his wife, Mrs. Ida Brown Neilson of Lexington. . . . We also regret to report the death of **Russ Lowe** in Fort Pierce, Fla., on December 24. We had a Christmas card in Russ's handwriting only days before, in which he said: "All goes well now, and I hope to send you a bit of philosophy, in verse, soon." The newspaper clipping received from his wife included the following: "Russell Edmond Lowe, 73, of 110 Yacht View Lane, St. Lucie Village, was pronounced dead on arrival at Fort Pierce Memorial Hospital after a Christmas Eve attack at his home. A native of New York City, Mr. Lowe's occupation was research and development in chemistry. He came here to live seven years ago from Heightstown, N.J. He was a 1913 graduate of Union College in Schenectady, N.Y., and of Massachusetts Institute of Technology in 1916. Surviving is his wife, Mrs. Vera L. Lowe."

If you are one of those who hear from **Clint Carpenter** now and then you have probably experienced that strong urge to visit Virginia almost any old time. For Clint writes glowingly of his adopted state and his home, "so close to many charming places, such as Williamsburg, Hot Springs, the Greenbriar; and our own Chesapeake Bay and James River area has a distinctive charm of its own." He writes that he and Phyllis recently attended a re-enactment of the first Thanksgiving in 1619 at Berkeley Hundred on the James River between Williamsburg and Richmond. "The traditional Thanksgiving dinner was served out of doors, complete with hot spiced cider, by waiters in attendance in colonial costumes—a very colorful affair." The program called it the 345th Commemoration Service: "Celebrating the landing of 38 Englishmen under the leadership of John Woodlief at Berkeley Plantation on December 4, 1619. The settlers came ashore and gave thanks to God, under instructions 'Wee ordaine that the day of our ships arrivall at the place assigned for plantacon in the land of Virginia shall be yearly and perpetually keept holy as a day of thanksgiving to Almighty God'." . . . **Merrick Monroe,** writing from Noroton, Conn., says he plans to retire in mid-spring this year and "just what I will do after that remains to be seen." Son John will graduate from Pomona College in California this June and the Monroes plan to be there and to see some of the western country. . . . The Cy Guethings are now (February) at their favorite Pink Sands Beach on Harbour Island, Bahamas. Here's one of Cy's reasons why: "My advice to him who would go to a doctor for check-up in the midst of holiday festivities and allow him to check weight and blood pressure, is: Don't do it! I did and now have to sojourn to milder climate to walk, swim, sail, and fish for exercise to take off blubber and so forth." And we always ask Cy for a story, a story from foreign lands, so here is his 1965 take: "There are several semi-wild horses here on the island, and on one of my early morning walks I met up with a couple. One of them had a tight rope around its neck and the humane act would be to remove it. Mr. W.H. appeared pleased with my cautious approach. I patted his neck, rubbed his head, and it appeared as though we had struck up a mutual friendship. So I reached for the rope, but a beware sign flashed in the form of flattened ears. He started to turn, I followed and tried to depart in a hurry. I felt two blows, both on my you-know-where, and I took a header in the sandy grass. Except for my pride no harm was done. But my advice to others is; let the Animal Rescue League fulfill its obligations and don't interfere with its work." . . . **Ralph Spengler** has been retired about seven years, lives in Cleveland Heights, and can be reached at a new address: 2395 Euclid Heights Boulevard. Under the heading "Suggested Topics" he says he is glad to talk about his grandchildren: "They live in Wellesley Hills, and I must say we see great possibilities for each one of them. We see them three or four times a year."

Jeff Gfroerer is the man referred to in the caption "Hamden Man Tells of Churchill Ties" in the January 22 issue of the New Haven Register. His contacts with Sir Winston go back to 1946 right after the Fulton, Mo., speech. Jeff spent

some time with him then and the morning after his speech at the M.I.T. Convocation. And they have been friends "for about 16 years, since the day Gfroerer, then associated with a local dictating machine company, presented the British statesman with one of his firm's machines;" and in 1949 Jeff spent a day with Sir Winston in Chartwell! Last November, watching a television interview with Churchill's secretary, Jeff "learned Sir Winston was planning to record some of the events of his life on a recorder—one presented in 1949." In correspondence that followed, Churchill's secretary wrote "saying that not only had the former prime minister recalled Gfroerer but had arranged for a set of 12 recordings of his speeches to be sent to him." Later in November Jeff read that Churchill wrote a book in 1903, "Mr. Broderick's Army," but had never been able to obtain a copy of the work. He did a little research, found the only copy in the United States, and arranged to have a copy made in a binding to look like others in Churchill's library. It was shipped about the time Churchill was stricken. " 'They know it's coming,' Gfroerer said, 'but I doubt if he'll ever see it. It was the only one of his 51 works that he was unable to get." Certainly a relationship to be proud of, Jeff!

We don't like to make promises but it looks to us as though we are going to have some more of this famous **Irv McDaniel** travel letters to quote from in the next month or so. For Irv and Kay have started off on a two and one-half month trek south of the border into Mexico, Guatemala, San Salvador and some exploring in Yucatan. Irv says: "We are mainly interested in the Pre-Columbian ruins, i.e., the Archaic Period, the Olmecs, Zapotecs, Toltecs, Mixtecs, Aztecs, etc. A week at Acapulco just to loaf, a week in the Lake Area of Guatemala, and we expect Mérida to be the climax of ruins, tropical beauty and fun. Hasta la vista." So we said: "Hasta la vista to you too, and do let us have some more interesting commentaries for the little old class column." Dear reader, please stand by. . . . Reverend **Ed Weissbach** says the rector of St. James Church in Cambridge, whom he is helping half time, is about Ed's daughter's age but "I don't feel too elderly because he has another part time assistant in George Lyman Paine. George is ninety—he was married in Trinity Boston in 1900, and he told me he gave the organist $25, and while he was on his honeymoon his father wrote him that he owed the organist $50 more as his fee for weddings was $75. And prices were supposed to be low in 1900!" Relative to the death of C. W. Lovell '15, Ed says: "I knew his brother Ward fairly well because we both worked one summer in the drafting room of the old Blake and Knowles Steam Pump works in East Cambridge."

Paul Austin asks from San Francisco if we noted that nearly half of those at the last reunion were Course II. We hadn't noticed but he's right! And Course VI was second, Course IV, third, and Course I, fourth. The Austins tell of a visit to the fabulous Hearst Castle, La Casa Grande, now a State Historical Monument in San Simeon, Calif., available for public tours. Atop La Cuesta Encantada —the Enchanted Hill—the castle "and its cluster of smaller but scarcely less imposing guest-houses has for years seemed like a medieval Shangri-La to those who had to view it from afar" (says a circular). As Paul says, parties are limited to 52 people and in October a party is taken every 20 minutes—in summer, every 12 minutes, and "I have heard that guides, to qualify for their jobs must have a master's degree in art." Paul is still working at Western Knapp Division of Arthur G. McKee & Co. of Cleveland. "My province of activity is steam engineering that is done in connection with the design of copper smelting plants, chemical plants, etc." A card from him in January from White Pine, Mich., gave evidence of continued activity.

Francis Stern has been in Palm Springs since mid-December, earlier than usual, but says it hasn't improved his golf and that any fall-out reaching New Jersey originates right there on the links! In January he flew to New York for an all-day meeting of the National Executive Committee of Junior Achievement as he is chairman of the Eastern Regional Board of J.A.. In New York he nearly "froze to death" in 17 degree weather—after leaving P.S. on one of two hot days at 86 degrees. . . . **Dan Comiskey** says 1964 was a year of relaxation for him with visits to his son and family (teacher in math at Taft School, Watertown, Conn.) and "trips through Vermont and New Hampshire, where agriculture has been replaced by recreation 12 months of the year. I see **Arthur Wells** at Wellesley often (see enclosed clipping); he has joined the retired." And the clipping provides us with a good picture of Arthur and Mrs. Wells, together with the Massachusetts Commissioner of Taxation, as he was honored at a testimonial dinner in Chestnut Hill on January 21. Arthur retired as Wellesley Treasurer and Tax Collector after 35 years of service. He is "a past president of the Massachusetts Tax Collectors and Treasurers Association, and a trustee and clerk of the Newton Savings Bank." The Wells' picture will be on the bulletin board at the reunion.

Like Paul Page Austin, **Bob Burnap** noted that Course II had the highest attendance at the 1964 reunion and that Course VI was second. Bob reports that his daughter and family including grandson Bobby, three and one-half, returned just before Thanksgiving after a year in Copenhagen. Apparently Bobby came back "with a Danish vocabulary, a Danish accent, and the notion that pets and taxi drivers all understand only Danish." . . . **Charlie Reed** says he has retired for the third time and guesses it's going to stick. Also says: "I really enjoy not getting up at 5:45 A.M. as I have been doing for the past four years," and that he'll be in that 50th reunion picture, and maybe in the 49th this year too, so as to get reacquainted. . . . **Jack Burbank** continues a good recovery and early in February was eyeing March 15 as a possible release date for golf. As for other activities: "As a member of the Town of Barnstable Planning Board, I am busy right now with meetings two and three times a week getting ready for the March town meeting—and handling a great many subdivisions. It is all most interesting especially since I am the only member who is not presently working at a job."

Frank Darlington writes from Leetsdale, Pa., that he finally got tired of giving the lion's share of any profits to Uncle Sam and formally went out of business "more a hobby than a business: the distribution of Currentographs and Correctocourses" on December 31, 1963. This he says saves some figuring on his 1964 return. Then: "Just now am deep in the heart of taxes, state and Federal and as I do all my own and family's tax work, it will keep me busy until the middle of April. However, I find it very interesting and not a little profitable." . . . In the February issue, we included a bit of philosophy from **Howard Claussen** in the form of a lilting poem by (we said) You Know Who. Now Howard says he has just "learned the author of my 'philosophy' was Ella (nee Wheeler) Wilcox, 1855-1919." And he adds: "My flying bridge is 90 per cent done." . . . **Jim Evans** reports that **Del deLabarre** is still undergoing treatments at Walsh Home, 420 E. 59 Street, New York City, that he was pleased indeed to receive the box of cigars, and wishes to express his appreciation to the donors, the 1916-1917 monthly luncheon group that meets at the Chemists' Club at 52 E. 41 Street. Incidentally the luncheon in February (held regularly the Thursday following the first Monday of each month) was attended at expanded tables by Messrs. Barker, Dodge, Evans, Mendelson, and Stone together with six '17ers. Jim also reports that **Stew Rowlett** in Clearwater, Fla., doesn't know when he'll get up North, hates to leave his place for more than a few days, had "couple weeks in the 50's which helped me use my 'city clothes'," and asked to be remembered to the old luncheon crowd. The luncheon crowd's answer to Stew: "Come on up!" . . . And speaking of Stew, and Florida, and Clearwater, **L'R. Bousquet** reports enthusiastically of just being settled in their new home, completed in November, in Greenbriar, a retirement community in Clearwater. He writes: "A year ago, when I first visited Florida, exploring most of the state, I was not overly impressed. It looked like a nice place to be in the cold months of the year but not where yours truly would care to live. Last June we returned to explore the west coast more thoroughly and discovered Greenbriar. Result: this is it! There are about 250 homes now occupied and there are to be a total of 736. The people in the community are extremely friendly and are from all walks of life. I think we are going to enjoy it." There are ten '16ers in this general west coast area including Lewis Dow, Coke Flannagan, Val Gooding, Howard Hands, Emory Kemp, Dick Knowland, Stew Rowlett, Charles Walter, Walter Wolfe, and now L'Roche Bousquet. If anyone wants addresses, let us know.

From **Harold Mills**, a near neighbor, we have: "—and once again I contribute

a few lines per order of our secretary. Our main diversion is exploring the isolated and little visited sections of the southwest, the natural arches and Indian country with its petroglyphs and old abandoned mines. We have made 10 round trips there by car on most of which we went to the coast to visit our two daughters and grandchildren.On one of our trips home we prowled around the dinosaur area of Vernal, Utah, where the big fellows weighing up to 40 tons each roamed from 50 to 200 million years ago. Actually they dominated the earth during that period and were present in many parts of it. We are still interested in bird photography. We got some nice shots of California birds including hummers last spring." And fine pictures he has, in color and profusion, of the out-of-the-way places in Utah and Arizona! . . . Going back to the December issue, we mentioned the **Theron Curtis**'s 50th wedding anniversary, and made some comment about Theron getting married while he was still studying. Now he comes back with this: "Just to keep the record straight, our first son was a leap-year baby, February 29, 1916. The **Emory Kemps** were ahead of us!" . . . It is a rare month that we don't find **Van Bush** somewhere in the news—this time we find him in the November issue of the Technology Review, and in reference to the final session of the M.I.T. Alumni Seminiar of last September, we read: "But Vannevar Bush, '16, Honorary Chairman of the M.I.T. Corporation, warned against the tendency of some to carry scientific reasoning into areas where it does not apply." Again we find him in a picture in the January issue of the Review, a picture for mounting on the bulletin board at the reunion in June and with the caption: "Professors Bloomfield and Smith flanked Vannevar Bush, '16, during a panel discussion of 'Man's New Responsibilities'."

We await some gems of observation from the **Don Websters,** who left early in February for the island of Mallorca in the Mediterranean for an away-from-the-blustering-cold vacation, their 1965 substitute for Bermuda. . . . Again we close the column with appreciation to the many who answer calls for lines or paragraphs or stories. Remember, it's not long now—the 49th reunion comes on June 11, 12, and 13. And to keep the column interesting and up-to-date, write a little but write often to—**Harold F. Dodge,** Secretary, 96 Briarcliff Road, Mountain Lakes, N.J. 07046.

'17

On this 30th day of January, as these notes are written for the April edition of the Tech Review, the thermometer outside our Connecticut window registers about six degrees above zero. Some classmates are basking in the warm climates of the southern states while others in the Midwest are digging their way out of snow at sub-zero temperatures. But as you read these notes, the Florida visitors will be journeying north, and the northerners will be polishing up their lawn mowers and spreading fertilizer over their lawn and enjoying the April sun. We hope that your summer plans include a trip to Cambridge for the Alumni Day get together. As the radio and television on this day are recording the funeral services for Sir Winston Churchill, many of you will recall the celebration at M.I.T. a number of years ago when he was the guest speaker. . . . Time marches on, and this month we record the passing of two members of the class who were at the Institute one or more years: **William P. Bealer** of Darien, Ga., who attended classes in architecture, and **Russell A. Wylde** of Newtonville, Mass., who studied biology. Our only information on these two men is a note from Bill Bealer in December 1957, in which he wrote: "I have remained a bachelor and, after practicing architecture for 30 years in Knoxville, Tenn., I retired on January 1, 1954, to the old home of my father and mother in Darien on the coast of Georgia where I was born. I live alone with Daniel, Lord Kelly, my Irish Setter. The days are not long enough in which to do all the things that I plan for the day. I have many interests: gardening, flowers, fishing, woodworking, etc."

This month's news consists of a number of random notes, the first of which quotes from the Christmas greeting of **Ralph Ross,** Danville, Vt.: "The Rosses send Christmas greetings and news of all the family including five children, 23 grandchildren and two great-grandchildren." Can anyone challenge the record of the Rosses? . . . On January 6 NBC, in a documentary film which explored the reasons behind "The Decision to Drop the Bomb," featured comments by Lt. Gen. **Leslie Groves,** who, as you know, was in charge of the Manhattan Project for the research, development, construction and use of the atomic bomb. . . . **Justin Basch** of Philadelphia, Pa., says: "I have been retired since December 1, and don't particularly enjoy it. I am looking into a few things to see whether I may keep busy without getting too busy." . . . **Admiral Sullivan** (Sully) writes on January 10: "We leave next Monday for Norfolk, Va., for a memorial service on Tuesday for General MacArthur. A dinner follows for the senior officers of the South West Command. On Wednesday we start for Las Vegas where we will probably hole up for the winter." . . . The January luncheon of the class at the Chemists' Club in New York City brought together the following: Bill Neuberg, Enos Curtin, Ed Aldrin, Dick Loengard, Admiral Sullivan, Al Morton, Billl Hunter, and the M.C. of the luncheon, Dix Proctor. . . . The meeting of the M.I.T. Alumni Center of New York on January 12 featuring speakers on Communist China brought together the following '17ers: Bob Erb, his wife and two guests, Justin Basch, Al Morton, and Dix Proctor and wife.

We are glad to report that at this writing both **Loosh Hill** and **Ray Blanchard,** who have been hospitalized for a number of weeks, are both on their way to recovery. It is hoped that when these notes reach you, both will be up and around. . . . **Ray Stevens** and his wife shove off for Florida next Monday, Feb. 1, to locate in their year round apartment in Naples on the west coast. They expect to be returning in April, about the time that you receive these notes. . . . **Tom Meloy,** after a sojourn to Antarctica, planned to attend the annual spring Fiesta of the M.I.T. Club of Mexico City. **Bill Dennen** is one of the regular yearly attendants. . . . A November 5, 1964, news item from Rockland, Mass., states that: "A survey of all business establishments in Hanover is being conducted by the Chamber of Commerce. The field work is being conducted by **Gerald W. Thomson** of Hingham, who has had extensive experience in such programs. Since his retirement from the Navy with the rank of captain aftere 27 years of duty, including service in the engineering field, Mr. Thomson has served on the faculties of Plymouth Academy and Wentworth Institute. He has also worked as engineer and architect for various business firms. The survey is expected to be very valuable in determining how the Chamber of Commerce can best serve the community in the future. . . . **Lucius Hill** was discharged from the hospital during the week of February 1.

For those who find themselves in legal difficulties, the following may be of interest. "A suspected thief was picked up in London's Hyde Park by an inspector from Scotland Yard. 'I must warn you,' said the inspector before booking the suspect, 'that anything you say will be held against you.' The suspect grinned. 'Elizabeth Taylor,' he whispered."—**W. I. McNeill,** Secretary, 107 Wood Pond Road, West Hartford, Conn. 06107; **C. D. Proctor,** Assistant Secretary, P.O. Box 336, Lincoln Park, N.J. 07035.

'18

Values are of supreme importance in this world. Bells of widely differing forms and sizes have long been used to echo, across the countryside, man's appraisal of value. Before the Christian era the old Romans used them as instruments by which to summon the hoi polloi to the public baths. Before clocks were common, bells proclaimed the hours of school. Since the sixth century they have rung out from church steeples on a variety of occasions. They call the living, wake the lazy, and mourn the dead. I still hear distinctly the golden tones of the bell which summoned **Don Merrill** and me to worship on a Sabbath day in the summer of 1917, when we disobeyed its bidding to sail down the Taunton River in his canoe. This was no cynical detachment on our part. It was a time of tranquility which deserved to be cherished in a world buffeted by men who would steal kingdoms where poor men steal bread. Bells never ring of themselves. Unless a human hand activates them, they are dumb. But of all the bells, the ones made necessary by an intervention of Alexander Graham Bell are the most numerous and the most impertinent.

They interrupt with an imperiousness unknown in other genteel human contacts. All of which brings us to **Carleton Tucker,** who has been waggishly described as the ringleader of the M.I.T. dial telephone system. He designed and set it up in 1941. To take a deep draft of statistics, M.I.T. is the third largest customer of the New England Telephone Company, its system serves a community of 15,000 people, requires thirty operators to cover the twenty-four hour service, employs eight or ten telephone installers and two or three repair men daily, and—thanks to Carleton—for its 5,000 odd phones, utilizes in its switching equipment half the square feet per line needed for the New York system. All this includes one line to television station WGBH, five to Harvard and to the Bedford Flight Facility, ten to Lincoln Lab, and connections to 400 lines at the Instrumentation Laboratory. "Mr. Watson, come here. I want you."

By becoming the 1945 Guggenheim Medalist "for outstanding contributions to the development of civil and military aircraft, and for notable achievement in assuring the success of our wartime aircraft production program," **Theodore Wright** has again rung the bell by being given pages 88 to 89 in a little volume called, "The Guggenheim Medalist—Architects of The Age of Flight." It chronicles his career from birth, through education, the U. S. Naval Reserve Flying Corps (ensign to two stripes), Curtiss Aeroplane and Motor Company (to chief engineer) where, under his supervision, many notable planes were produced, such as the Hell Diver, Condor, and the Curtiss Tanager which won the $100,000 Guggenheim Safe Aircraft Competition in 1929. "In June 1940 he was called to Washington to serve with the Advisory Committee for the Council of National Defense to program the acceleration of aircraft production. In February, 1941, he was named assistant chief of the Aircraft Branch of the Office of Production Management, which became the War Production Board. When the Aircraft Resources Control Office was established in March, 1943, Wright became its director. It was this office which was called upon by the President to direct the procurement of 50,000 planes per year, at the time considered a fantastic goal. It was not only accomplished, but the original production rate was doubled. Wright's appointment as administrator of Civil Aeronautics was announced on September 20, 1944. In November of that year he served as technical secretary of the International Civil Aviation Conference in Chicago. As C.A.A. Administrator he established the Non-scheduled Flying Advisory Committee, and was active in the program for improved aids to air navigation and instrument landing, and airport development. In the same period he was director of the Aircraft Division of the United States Strategic Bombing Survey, and also served as vice-chairman of the National Advisory Committee for Aeronautics and Chairman of its Aerodynamics Committee. He resigned from the C.A.A. in 1948 to become vice-president for research at Cornell University, and president of the Cornell Aeronautical Laboratory at Buffalo, in which capacities he served until his retirement in 1960. He was acting president of Cornell from February 1, 1951 to July 1, 1951, and was chairman of the Executive Committee of the Daniel and Florence Guggenheim Aviation Safety Center at Cornell from its founding in 1950 until 1961."

For **Edward Esty,** retired distribution superintendent for the Blackstone Valley Gas and Electric Company, the bells tolled on November 29, 1964, when his memorial service was held at the Pawtucket, R.I., Congregational Church. He was a Mayflower descendant, a World War I lieutenant in the navy, a member of the Rhode Island chapter of the American Guild of Organists, the Kiwanis Club, the Engineering Society, the University Club and the Palestine Temple Shrine, all of Providence. At one time he was the youngest licensed automobile operator in the country when, in 1904 at age eleven, he was granted an unrestricted operator's license. He is survived by his widow, a son, a daughter, and eight grandchildren. A second son was killed in a 1958 plane crash while on duty as a Naval Reserve officer. "How soft the music of the village bells."—**F. Alexander Magoun,** Secretary, Jaffrey, N. H.

'20

Foster Doane writes: "I am looking forward like so many of us to our coming reunion next June. I recently returned from an interesting trip to East Pakistan where, with Art Wakeman of the class of 1921, I went to make a checkup on a newsprint mill. I met Art in London, we stopped a couple of days at Beirut and continued on to Dacca, East Pakistan through Teheran and Karachi. We were at the mill and timber limits for three weeks and returned through Calcutta, Bangkok, Hong Kong and Tokyo. One of the most interesting parts was a 400-mile boat trip in the Sunderbans Forest, a virtually impenetrable jungle, making logging very difficult. I saw a fine big tiger, several crocodiles and hundreds of deer. The poverty in India and Pakistan is beyond belief. Common labor only gets about 50 cents a day. Because of this trip, I missed my regular December stay with **Frank Badger** at Hollywood Beach but am looking forward to spending some time with Frank later in the year." . . . **Adrian Marron** died last summer at his home in Hendersonville, N.C. He was a commodore, U.S.N. retired, and received a degree in Naval architecture. His administration of the Boston Naval Shipyard during both world wars earned him two Legion of Merit Medals and many other awards. His winter home after retirement was in Charleston, S.C., and he left his wife, two daughters and a son. . . . **Roger McNear** has been good enough to send to me from Tucson the address for **Charles Lawson,** which is Surf Side Apartments, Gulf Shore Boulevard, Naples, Fla. . . . **Ed Bragg** is in Greenwich, Conn., 2 Martin Dale. . . . **John Elliott** is in Newburyport, Mass., at 37 Green Street. . . . **Clyde Hall** is living at 728 North Casey Key Road, Osprey, Fla. . . . And **Lauren Hitchcock** is in Buffalo, N.Y., at 57 Flower Street. How about coming to the Reunion fellows? Did you get the announcements? One of them was returned unopened from **Marcial Martinez,** Santiago, Chile. Anyone know his whereabouts?

Word has just been received that **Myron Clark** has become the proud grandfather of twin girls, born to his son Harrison who already has three sons. Congratulations, Buck! Don't fail to get in touch if you need more dope on the Reunion—**Harold Bugbee,** Secretary, 21 Everell Road, Winchester, Mass.

'21

Thanks to the observant eyes of **Chick Kurth,** we have an interesting article from the Boston Magazine for January, entitled "Orphans No More: A New Facility for Private Fliers," which heralds the new million-dollar Edson Terminal at Boston's Logan International Airport, designed for the exclusive use of so-called general aviation passengers and pilots who make use of their own flying equipment instead of the commercial airlines. Officially opened last fall, this facility is the original old Boston air terminal, which has been done over in handsome style to put Logan at the top of American airports serving private flying. To us, the most outstanding fact about the roomy new terminal adjacent to Sumner Tunnel and only two miles from downtown Boston is that it has been named in honor of our own Colonel **Albert L. Edson,** who was manager of Logan for 27 years prior to his retirement in 1956. It is largely due to Al's foresight that private flying has increased 147 per cent at Logan in the last three years, resulting in 60,000 landings and take-offs of private light sports models to six-ton jets, which carried some 200,000 people in a year. More amazing is that Edson Terminal fees have not been increased for the improved area or the specially assigned maintenance, fuel, equipment supply, ground transportation, restaurant and news services, plus the additional F.A.A. and Weather Bureau offices. Our hat's off to Al, who makes his home at 102 Bellevue Street, West Roxbury, Mass. 02132. . . . Thanks to our devoted reporter, **Sumner Hayward,** we have details of two new honors which have been showered upon **Augustus B. Kinzel,** Vice-president for research of Union Carbide Corporation. Gus has been named the first president of the National Academy of Engineering, created under the charter of the National Academy of Sciences to operate "on an autonomous but parallel and co-ordinated basis alongside the Academy of Sciences in the furtherance of science and engineering and in serving the needs of the Federal Government for responsible advice in these fields, which are so crucial to the national welfare." The second recent honor to Gus is his appointment by New York's Governor Rockfeller as vice-chairman of the newly created New York State Science and Technology

Foundation, "to spur the state's scientific research and to attract leading scientific and technological educators to join the faculties of state-supported schools, colleges and universities." Claiming that New York leads the country in the number of research and development laboratories, the governor gave the foundation funds and broad powers to aid New York's economic growth through excellence in scientific education, research and the creation of future job opportunities. . . . A brochure, entitled "The Guggenheim Medalists—Architects of the Age of Flight," includes a tribute to **Arthur E. Raymond,** retired vice-president for engineering of Douglas Aircraft Company and recipient of the Guggenheim Award in 1957, for "the development of a long and successful line of civil and military aircraft and for notable contributions to aeronautics in public service." An interesting anecdote relates that, on receiving his master's degree in aeronautical engineering with us, he first joined the staff of the Raymond Hotel in California, owned by his father, but took courses in structures at Caltech and got a shop job with Douglas. When Donald Douglas asked M.I.T. to recommend a good man in stress analysis, the prompt answer was: "He is Arthur Raymond. He works in your shop."

Henry R. Kurth, Vice-president of Boston Edison, has consented to continue in the capacity of representative for the Class of '21 on the Council of the Alumni Association. He is also heading the Boston special gifts committee of the class along with Mich Bawden, Josh Crosby, Ed Delany, Harry Goodman, Frank Kittredge and Larc Randall, and he is serving on Mel Jenney's committee for our 45th Reunion in June, 1966. . . . **Everett J. Wilson** has sent us a most welcome letter from his new home in picturesque Temple, N.H., where he now receives mail addressed to Box L37 and zip code 03084. Ev says: "Just a line to let you know that I am retiring to the above address from my former home at Swampscott, Mass. My family continues to grow. There are now nine grandchildren and we had the pleasure of seeing them all together on New Year's day, when they came to visit with us here. We hope to start on a three-month trip to the south and west, beginning in May, so I will probably miss commencement and Alumni Day this year but I am looking forward to our 45th in 1966 at the Griswold in Groton, Conn." Ev has for years been a member of the engineering staff of the New England Electric System.

George Atkinson writes to confirm his home address as 4204 Adawood Drive, Akron, Ohio 44321. . . . **Eugene S. Clark** says he lives at 2612 West Lake Street, Springfield, Ill. 62707. . . . **Thomas B. Davis** heads the Davis Company, P.O. Box 9245, Memphis, Tenn. 38109. . . . **Roderick K. Eskew** has moved from Glenside, Pa., to a new home, "Roseburn," Penllyn Pike, Spring House, Pa. . . . **S. Paul Johnston,** newly appointed Director of the Air and Space Museum of the Smithsonian Institution, has transferred his home from Princeton, N.J., to 3713 Alton Place, N.W., Washington, D.C. 20016. . . . **Herbert A. Kaufmann** still maintains his antique shop at Scotts Corners, Pound Ridge, N.Y., 10576. . . . **Edward W. Noyes** has made his seasonal journey from Thompson, Pa., to his winter home at 1410 S.E. 7th Avenue, Pompano Beach, Fla. . . . Another Florida commuter, **George Schnitzler,** is at 1932 North Michigan Avenue, Miami Beach, while the snow is on the ground in Brookline, Mass. . . . **Churchill K. Stiff** reports a new home address at 34 Newland Street, Norton, Mass. 02766. . . . Continued silence from **Robert R. Whitehouse** veils the reason for the recent move of his home from Unity, Maine, to 633 70th Avenue, St. Petersburg Beach, Fla. 33706, but we suspect it has something to do with retirement and warmer winters. Right, Bob?

Ralph M. Shaw, Jr., of Beverly, N.J., took time out from his duties as president of the Pedrick Tool and Machine Company, Philadelphia, to send us the following account of his most recent travels. Rufe says, in part: "New Year's leaves me cold. You watch the Mummers Parade on T.V. and then the Tournament of Roses Parade and wish you were there. So I got the idea of going some place. Two years ago, we went to Pasadena for the Rose Bowl game and I got pneumonia and almost died. The heavy dose of penicillin laid me out and it took fast work on the part of the medico to keep me alive. However, they knocked the pneumonia out of me and we went to Hawaii and kept on going around the world. Last year, I was in Egypt with Madeline, our daughter, son-in-law and grandson. This year, we tried the Rose Bowl again and have just returned. I had a phobia that I would die of pneumonia in Los Angeles. Long experience has taught that the best cure for a phobia is to trot it out and look it over. We saw a grand Tournament of Roses Parade, a magnificent football game and came home with all flags flying. Another phobia has hit the dust. It never rains in Los Angeles this time of year, but it did this time. We left Philadelphia in a driving rain at 70 degree temperature and got off in Los Angeles in a driving rain at 60 degrees. It was snowing in the mountains and, in some parts, they had twenty feet on level ground. The radio announced it. That is good. Next summer, they will have lots of water in the Valley, crops will be good and the farmers rich; hydroelectric companies will have more water, run their steam plants less and make money. After a week of continuous rain, it dawned clear on New Year's and the parade went on under clear skies. I chartered a car and drove 1,275 miles in five days. We went to San Diego, Riverside, Redlands and Carmel. In the rain, we did not follow El Camino Real; instead we went over Tejon Pass to Bakersfield and over Cholame to Paso Robles. There is an absolutely straight concrete highway with no cross roads or houses and a speed limit of 65, but it is hard to hold down to 80. The snow line on the mountains came within 500 feet of the Valley, a most unusual condition. In Carmel, I looked up **Raymond C. Fisher.** He was out and I did not have time to call again. We had a good time. Madeline got a thrill out of each float in the parade; when the Michigan fullback ran 84 yards through the entire Oregon State team for a touchdown, that was a thrill, too. Now we're off to the West Indies for the winter months."

It was a real pleasant surprise to have a phone call from **Jackson W. Kendall** of South Pasadena, Calif., during his recent trip to Washington, D.C., for an I.C.C. hearing on Bekins Van and Storage Company transportation matters. Unfortunately, Jack didn't have time to come farther north. His return trip was scheduled to include a stop to see one of his fine sons and the grandchildren. He and Marge are planning a visit to Honolulu and then a six-week tour around the world. Jack sounded just like the enthusiastic young man of our days on the Charles and we are glad to know that his "retirement" is filled with such pleasant activity. As we prepare these notes, a bulky envelope has arrived from Jack's home at 401 Hermosa Place, South Pasadena, with a much-appreciated letter, which says: "Just a little note to add to our phone conversation of last week when I was in Washington. Also had a nice phone visit with Helen and **Ray St. Laurent.** As the I.C.C. building connects directly with the Post Office, including the philatelic agency, I always drop in there to pick up something of interest. This time, it was the new stamped envelopes, which are being sold in sets. Enclosed is a set for you. On my return, I spent the weekend in Salt Lake City with the Jack, Jr., family, who moved there last fall. There was lots of skiing and beautiful snow. Our travel plans for this year have not yet jelled, since the I.C.C. hasn't made up its mind just when the Bekins and other Hawaiian applications will be heard. In any event, we'll be seeing you and Mac at the 45th reunion in 1966." Though Jack didn't know it, his letter, dated on our birthday, and the very welcome addition to our stamp collection, both constitute specially handsome remembrances of the day. . . . **Carl Thumim,** Vice-president and Chief Engineer of the Lawson Machinery Corporation, 219 East 44th Street, New York City, is the author of an article in the technical reference book published by Product Engineering. Entitled "Constant Torque Power Cams," it comprises procedures for designing such cams, as distinguished from time displacement cams. . . . **Victor S. Phaneuf** is professor of building construction at the University of Florida, Gainesville, Fla. . . . A personal note from **John T. Rule,** Professor of Engineering Graphics in the Department of Mechanical Engineering at M.I.T., includes the news that he was recently a member of a technical panel at the University of Alabama and attended a dinner of the group at which **James R. Cudworth,** Dean of the University of Alabama School of Engineering, and Mrs. Cudworth were hosts. . . . Maxine and your secretary attended a presentation by the M.I.T. Concert Band at Douglass College in New Brunswick, N.J. Direction, technique and ensemble were excellent but the evening turned out to be a sad disappointment in the failure to conclude

with our "Stein Song." Who could be ashamed of what has been called the most outstanding college song in the world? Must be they're allergic to even just a little bit of old-fashioned melody and harmony.

Edmund G. Farrand was active as a host to Professor Mann of M.I.T. at his recent talk on "Sensory Aids for the Blind" to the M.I.T. Club of Atlanta. . . . **Saul M. Silverstein** had barely returned from a five-week business trip with Rigi to Dublin, London, Amsterdam, Brussels, Milan, Palermo, Rome and Paris when we received a fine letter from him which says, in part: "Rigi and I are leaving for Mexico City, where I have business appointments for approximately three weeks. On our way to and from Mexico, we will visit with our children in Sarasota." Needless to remark that we continue to enjoy Saul's detailed reports of his travels, of which the eight recent documents record the European tour. An airmailed card with a stunning night view of the National Palace, Mexico, D.F., has a note: "Quite a country. Regards," which undoubtedly heralds a further series of discerning memoirs on our sister republic to the south. . . . News of recognition and salutes to **John W. Barriger, 3d,** on his retirement as president of the Pittsburgh and Lake Erie Railroad continue to pour in. The latest is a program of a formal dinner tendered by representatives of industry, the carriers and the Traffic Club of Pittsburgh. By now, John is well on his way towards writing another brilliant chapter in Barriger history, this time through his new association with the St. Louis-San Francisco Railway Company. . . . **George A. Chutter** writes, in part: "I had lunch with **Rufe Shaw** in Newark, N.J., during the holidays. He certainly gets around. Also spent a delightfully relaxed evening with **Joe** and Dorothy **Wenick** at their home in Caldwell, N.J., talking over retirement and the high velocity of time. Your class notes are tremendous." We have just sent congratulations to George and Marion on the marriage of Miss Karen A. Beck of Woodland Park, Conn., to their son, Roger, on December 26, 1964. Karen is a graduate of Chaffee School and Simmons College School of Physical Therapy. Roger was graduated from Loomis School and Bethany College and is in the doctoral program at Michigan State, Lansing, Mich., where the young couple now live.

Word has been received of the death of **Harry Jonas Abrams** of 331 Emerson Street, N.W., Washington, D.C. 20011, but no further information is available. We wish to express to his family the sincerest sympathy of the entire Class. A native of Hobart, N.Y., he joined '21 in our sophomore year in Course XV. During World War I, he was an apprentice seaman in the S.N.T.C. at M.I.T. At the time of his death, he was the owner of the H. J. Abrams Company in Washington. . . . Reminders: Meet with the Class of '21 at the next annual Alumni Day at Technology on June 14, 1965. And don't fail to plan your attendance at our 45th Reunion in June, 1966, just before Alumni Day on the 13th. For ideal vacation enjoyment, set up your 1966 itinerary now to include the perfect spot in historic southeast Connecticut, where the members of the Class and their wives will spend several days at the fabulous Griswold Hotel and Country Club on Eastern Point in Groton, Conn., near New London. The 18-hole championship golf course is a golfer's paradise, overlooking Long Island Sound. There is swimming in the Olympic pool, tennis, shuffleboard, croquet or just sitting on the wide verandas or soaking up the sun on the beach. The superbly furnished hotel and its 170 acres have all the facilities that make it a natural for our gathering and its strategic location makes it easily accessible. It is a central point for limitless sightseeing in old and new points of historic and current interest, which range from pre-revolutionary days to the construction of the newest atomic submarines. The food and the spacious rooms invite you to relax in regal comfort. You and your wife will find a hearty welcome, whether or not you have ever attended before. At the close, there'll be ample transportation to Cambridge for Alumni Day at the wondrous new and still growing M.I.T. community. For help in making early plans, contact Reunion Chairman **Mel Jenney** at the address below and let your secretaries know if they can be of assistance in getting your neighbors, fraternity brothers, course mates and other close friends to be there, too.—**Carole A. Clarke,** Secretary, 608 Union Lane, Brielle, N.J. 08730; **Edwin T. Steffian,** Assistant Secretary, c/o Edwin T. Steffian and Associates, 376 Boylston Street, Boston, Mass. 02116; **Melvin R. Jenney,** Reunion Chairman, c/o Kenway, Jenney and Hildreth, 24 School Street, Boston, Mass. 02108.

'22

After three days of February snow in Buffalo, your secretary has decided to check on class activities in Florida for a week by calling on **Frank Kurtz** at Del Ray—strictly for the notes. He reports that the arrival of winter has still brought no deep snow. Skiing is good to excellent. Frank Kurtz has written that **Ted** and Mary **Riegel** of Larchmont have dropped in to take possession of a house in Del Ray Beach and will move there permanently. They are calling their little neighborhood "Technology Square South" as Walter Dietz, '23, lives only two doors away. He reports that **Fred Dillon** has bought an apartment in Deerfield Beach, which will give Frank a full time job as vice-president for Florida of the Class of '22. Frank plays tennis four or five times a week and is vice-president of the Del Ray Beach Play House. He is a most active retiree. . . . The First Citizen Banquet honoring **Horace McCurdy** must have been an outstanding event in Seattle judging from the very nice newspaper clippings of Katy and Mack as well as the beautiful brochure and program. Horace has written that he appreciated very much the telegraphic plaudits of the class. . . . To share in the class honors, your secretary received a nicely worded Citation and Gold Key Award from the Y.M.C.A. of Buffalo for service as an "outstanding citizen." . . . The Boston Gas Company has announced the retirement of **Earl H. Eacker,** Chairman and Senior Vice-President of its parent company, Eastern Gas and Fuel Associates. Buck has been with the company 41 years and was president from 1948 until 1964. He will continue as trustee of Eastern Gas and will serve Boston Gas as required on special projects still pending. . . . **Clate Grover** has complained semi-officially of the Erie Lackawanna service from Orange to New York. Your secretary will try to have future service improved.

The sympathy of our Class is extended to the family of **Leonard B. Laird** of Stowe, Mass., where he was president of New England Envelope Company of Worcester. He was a member of the Kiwanis Club and active in church and civic affairs. He had spent several of the past winters in Sarasota. . . . Among the new addresses received are those of **Lester Lewis,** Washington, D. C.; **Donald Stowe,** Ozona, Fla.; **James Macintyre,** Clinton, Mass.; **William Hodges,** Lexington, Mass.; **G. Everett Farmer,** Signal Mountain, Tenn. . . . Yours 'til the sunburn heals—**Whitworth Ferguson,** Secretary, 333 Ellicott Street, Buffalo, N. Y. 14203; **Oscar Horovitz,** Assistant Secretary, 33 Island Street, Boston 19, Mass.

'23

Herbert L. Hayden, past class Secretary-Treasurer, manager af the DuPont Company's Doyle Works at Leominster, Mass., retired February 28 after a career of 37 years with the company. Mr. Hayden joined DuPont in 1928 at the Leominster plant as chief draftsman. Three years later he was promoted to superintendent of maintenance and construction. From 1941 to 1943 he worked in three plants operated by DuPont for the United States government. First he went to the Indiana Ordnance Works, near Charlestown, Ind., as shops engineer, then to Kankakee Ordnance Works, near Joliet, Ill., as maintenance superintendent and finally to the Wabash River Ordnance Works near Terre Haute, Ind., also as maintenance superintendent. In 1943 he was transferred to the Arlington (N.J.) Works as engineer and in 1954 was promoted to works manager at the Doyle Works. Mr. Hayden is a member of Theta Chi fraternity, the American Society of Mechanical Engineers, and Plant Engineers Association, and also holds a professional engineering license in the state of New Jersey. He belongs to the Oaks Hill Country Club, the Fay Club in Fitchburg, Mass., and the Lancaster, Mass., Town Finance Committee. He is a member of the board of the First Church of Christ Unitarian in Lancaster of which he is treasurer. He is also chairman of the Lancaster Housing Authority, a trustee of the Massachusetts Foundation, and general chairman of the chemical division of that organization in the state. He is a former chairman of the Leominster Chapter

of the American Red Cross, an incorporator of the Leominster Savings Bank, a director of the Worcester County Safety Council, and is active in Junior Achievement, Inc., of Fitchburg and Leominster. Mr. Hayden was born in Cambridge, Mass. While at M.I.T. he was a member of the Student Council and captain of the varsity hockey team. He lives on Main Street in Lancaster, Mass. Your secretary-treasurer knows that Herb still plays hockey on the Nashua River which flows through Lancaster.

George W. Bricker of 56 Turtle-back Road, Wilton, Conn., a management counsellor, consolidated his operation in consulting assignments on January 2, 1965, with the firm of C. W. Robinson and Company, general management consultants, with offices in New York City, Rome and Karachi. As a member of this firm, Mr. Bricker will be concerned with top management planning and control, including long-range planning, organization development and marketing management. During the last six years Mr. Bricker provided management counselling service from an office in Wilton, first as an independent counsellor and more recently through the firm of Bricker and Ahl which has been dissolved. In addition to his electrical engineering degree from M.I.T., he holds a degree in business administration from Harvard and a law degree from Northeastern University. He was a principal in the management consulting firm of Robert Heller and Associates in Cleveland for 16 years, and during that time was a member of the Post Office Department Task Force of the first Hoover Commission which was created to reorganize the operation of federal government departments.

Edward McSweeney has been elected to the board of directors of Graphic Controls Corporation, Buffalo, N.Y. His graphic arts marketing and management consulting firm, Edward McSweeney Associates, dates from 1933. His recent book is titled, "Organizing for More Efficient Management." He also serves on the boards of Amerace Corporation, Curtiss-Wright Corporation, National Blank Book Company, Publishers Distributing Corporation and Tecnifax Corporation. . . . **Roger J. Evans** represented M.I.T. at the dedication of the Franklin F. Moore Library at Rider College on January 23, 1965. . . . Word has been received of the death on June 28, 1964 of **Herman D. Beaudet,** 162 Pleasant Street, Gardner, Mass. No details were given. . . . The M.I.T. Club of New Mexico reports that it has lost a distinguished and honored member by the death on January 13, 1965, of **Alfred Manchester Perkins.** Don Alfredo gained international recognition and reputation by his outstanding artistry in the carving and preparation of miniature figures of historic characters. The collection he created over the years is worthy of any museum. On February 22, I received a phone call from **Bertrand A. McKittrick** saying that **Royal Sterling** had informed him that on February 18, **Robert J. Hull** was found in his car at the side of the road near Colrain, Mass. He had no details but it would appear that he was the victim of a heart attack.

A letter we received from **Royal Sterling** gives his new address as 1340 Warwick Neck Avenue, Warwick, R.I. He reports that in 1964 he completed a colonial ranch and moved in on their return from Europe in August. The home stands on the site of an old fort. They enjoy a 180-degree salt water view from Barrington on the North to Fall River, Newport and Quonset Point on the South. In December, 1963, and again in February, 1964, he took a cruise to Nassau. In June, he and Mary went around the Cabot Trail in Cape Breton. In August they flew to England and then to Germany. From Germany they went to Vienna, then flew over the Alps to the French Riviera. From Nice they drove 200 miles on a bus through the French and Italian Rivieras to Rappalo, Italy, then to Genoa where they boarded the S.S. Constitution for the eight-day trip home.

An interesting article in the Boston Globe of June 4, 1964, entitled, "Old-Fashioned Grace Survives in Atomic Era," sets forth how, under the leadership of William Webster, Chairman and chief executive, the New England Electric System, over the past 15 or 18 years has changed from 65 operating companies and six holding companies with 18 classes of stock into a system controlled by one holding company. . . . An interesting article in the Sunday Tribune, Chicago, Ill., May 3, 1964, entitled, "Al Perlman: Railroad Chief Par Excellence," describes **Alfred E. Perlman,** president of the New York Central Railroad as a railroad man "with the heart of a banker and the soul of an engineer." It then outlines at length his many accomplishments in 46 years of railroading. This is his 11th year at the helm of the Central. His interest in engineering and technology has never flagged. Shortly after he became president of the Central a new research center was opened in Cleveland. Now he is the in the forefront of expanding the 20th century frontiers in cybernetics to all phases of Central operations and beyond. Biggest of all the massive Perlman challenges is the twice-proposed merger of the New York Central and the Pennsylvania Railroad, now in the intermediate stages of fruition. . . . A report in "The Guggenheim Medalists—Architects of the Age of Flight," tells of **Edmund Turney Allen,** Medalist for 1943 (posthumous) who was honored "for major contributions to aeronautics leading to important advances in airplane design, flight research, and airline operation; particularly for the presentation of new methods for operational control and for the development of scientific and systematic methods in the flight testing of aircraft for basic design and performance data."

He was a truly outstanding representative of that small company of bold and devoted men who risk their lives and sometimes, as in his case, forfeit it, in order that the age of flight might continue its increasing and spectacular advance. Edmund Turney Allen was born in Chicago, January 4, 1896. His father died in 1913, and a good part of his early education was self-obtained. He was graduated from high school in Chicago in 1913, and two years later matriculated at the University of Illinois. Soon after the United States entered World War I, he enlisted and joined the officers' training camp at Fort Sheridan. Holding the rank of Lieutenant in the Signal Corps, Aviation Section, he served as a pilot instructor in 1916. In 1918 he conducted flight tests at Martlesham Heath in England. The next year found him flight testing in McCook Field. After the Armistice he spent a year at the University of Illinois and two years at M.I.T. During the summers he acted as chief test pilot for the National Advisory Committee for Aeronautics at Langley Field. From 1920 to 1922 he was engaged at M.I.T. in designing, building and flying gliders, two of which he flew in competition in France and Germany. At that time I was informed that on one occasion Edmund's glider was catapulted into the air from a hill by the use of heavy elastic cords. Before he could come down air currents became of gale proportions. In descending his glider was reported to have landed in a tree. He fell through to the ground and spent some time in a foreign hospital. I understand that he was assisted with his glider project by Otto Carl Koppen, '24, Harry Charles Kaucher and other students interested in aeronautical engineering. At that time, there was no course in that subject as such; the students mentioned were taking course II. The next year Edmund succeeded your secretary-treasurer as president of the Aeronautical Engineering Society at M.I.T. In 1924 he again served as test pilot at McCook Field, and from 1925 to 1929 flew the mail for United Air Lines. In 1930 he joined the Boeing Airplane Company as test pilot for the Northrop Corporation. Then, in turn, he became consulting engineer and test pilot for Chance Vought Aircraft, Pan American Grace Airways (where he set a world's altitude record for standard commercial passenger planes of 29,800), Eastern Air Lines, Curtiss-Wright Corporation, Douglas Aircraft Company, North American Aviation, Lockheed Aircraft Corporation, Stearman Airplane Company, Sikorsky Aircraft, Pratt and Whitney Aircraft, Spartan Aircraft Company, and Consolidated Aircraft Corporation. In 1939 he rejoined the Boeing Airplane Company, where he became director of Flight and Aerodynamics. Recognized as the leading American test pilot of his day, he was the first recipient of the Octave Chanute Award, given annually by the Institute of the Aeronautical Sciences. In December 17, 1942, he delivered the Wright Brothers Lecture in New York, presenting a paper on "Flight Testing for Performance and Stability." Less than a year later on September 18, 1943, he was killed in the crash of a new Army bomber he was testing. The Guggenheim Medal and its accompanying scroll were presented to Mrs. Allen in Seattle on behalf of the Board of Award by Philip Johnson, then President of the Boeing Airplane Company. The plane which had been under test became the B-29, noted combat weapon of World War II. The presentation ceremony marked the opening of a laboratory constructed by the Boeing Company and named in Allen's memory. At the time his plane

crashed, I remember that one of the top magazine editors stated that this country could ill afford to lose a man of Edmund Turney Allen's capability. For a most unusual account of Edmund's exceptional career you are urged to read an article about him in The Readers' Digest for February, 1965, by his friend Thomas Collison, entitled, "The Most Unforgettable Character I've Met."

The following changes of address have been reported: **Francis L. Cronin,** The Fountin Head, 3900 North Ocean Boulevard, Fort Lauderdale, Fla.; **DeRosey C. Cabell,** 3351-29th Street, San Diego 4, Calif.; **Harold H. Leary,** 39 Cullens Run, Pittsford, N.Y. 14534; **Charles Shilowitz,** 26 Journal Square, Jersey City, N.J. 07306; **Edward McSweeney,** RD No. 1, Armonk, N.J.; **Lyman L. Tremaine,** 422 Baker Ave., Westfield, N.J.; **U. A. Whitaker,** A.M.P., Inc., P.O. Box 3608, Harrisburg, Pa.—**Forrest F. Lange,** Secretary, 1196 Woodbury Avenue, Portsmouth, N.H. 0381; **Bertrand A. McKittrick,** Assistant Secretary, 78 Fletcher Street, Lowell, Mass. 10852.

'24

In the February notes we told you of the retirement of the Rt. Rev. **James C. L. Wong** from his Bishop's post in Malaysia. And we said: "looks as though Jimmy has completed the second phase of a distinguished and varied career." How wrong is it possible to be! Now comes word in an annual end-of-the-year letter: "The retirement did not last long. At the meeting of the House of Bishops of the Episcopal Church of America held in St. Louis, Mo., during the general convention in October, James was elected the Bishop of Taiwan. We shall take up our new assignment early in January." And by the way, that letter told us for the first time where the name Formosa came from. Portuguese sailors in the sixteenth century called it Ilha Formosa, Island Beautiful. . . . The **J. Adalberto Roigs** were in the Far East last fall, and they had hardly arrived home before Al took off for Acapulco to participate in the 21st International Light Tackle Tournament. They were fishing for sailfish and marlin on 20-pound line. Of 33 teams, Al's Humacao Angling Club tied for fourth place. This year the tournament is in Venezuela, and when Al leads his club down there it will be as president of the Association. . . . The Kappa Sigma Alumni Association of Pittsburgh met in December "to honor **J. Earl (Bing) Frazier** who was selected 'Man-of-the Year' by the Association." The award was made by no less a person than former Pennsylvania Governor and State Senator, General Edward Martin.

From Germany "M.I.T. Luftpost" comes a card from **Griff Crafts** informing us that he had been paying a long visit to his daughter and her husband in Heidelberg. While Griff vacationed Betty was hard at work making a long transcontinental tour with the National Repertory Theater. . . . And from Miami Beach comes the annual mid-winter invitation from the **Henningers** to "Come on down, you all" and help them enjoy the warm Florida sunshine, azure blue skies, and ever swayin' palms. With winter outstaying its welcome in the north, it sounds tempting. . . . **Richard Headstrom,** science teacher in the Hopedale (Mass.) Junior-Senior High School and curator of entomology at the Worcester Science Museum, is writing a bi-weekly column in the Worcester Telegram, "Animals in Your Back Yard." . . . There has been no direct word from **Jack Cannon** for years and years. Remember Gentleman Jack? Seems he has been in New Jersey all this time and last year turned up as program chairman of the M.I.T. Club of Northern New Jersey. . . . It was only a couple of months ago that we gave **George Lindsay** and his Canadian Holiday Lines a free plug in this column. Now he's crossed us up by retiring. He's left the Great Lakes and gone south to Louisville. So if you take that cruise now don't expect George to make the arrangements. . . . And here is another retiree who's gone much farther in that direction. We reported last spring on the retirement of **Godfrey Kearful.** Evidently the winters in Saginaw, Mich., were too much for him. He's now in Bradenton, Fla., probably waiting (as of the time these notes were written) for the spring training season to start. . . . **J. Henry Leon** II, one of our civil engineers, died last May, but we have just learned about it. He had lived in Framingham, Mass., for the past 10 years, having come up from New York to be engineering manager for Howard Needles, Tammen and Bergendorf, general engineers for the Massachusetts Turnpike Authority. . . . Last January, **Ernest H. Frenzell** died in Sacramento, Calif. He had been active in alumni affairs, especially in the regional program of the Alumni Fund.—**Henry B. Kane,** Secretary, Room E19-439, M.I.T., Cambridge, Mass. 02139.

'25

That the 40th Reunion is now just over the horizon is a matter which you should definitely keep in mind; and if you have not already responded to the several mailings from the General Chairman, **Dave Goldman,** won't you please assist the committee by dropping some information in the mail today. Although we are within only a couple of months of the Reunion, there is still much planning to be done and we need your whole-hearted cooperation and assistance. The Reunion Gift Committee is also very busy and they need your assistance as well, so don't neglect them. . . . Many members of our class have been in the news during the past few weeks. Belatedly, we learn that **Bill Asbury** has been elected to the board of directors of the Central Home Trust Company in Elizabeth, N.J. . . . The Ohio Wesleyan University magazine carried information regarding **Galen A. Wallace,** one of our civil engineering classmates, who is presently stationed at Arnold Air Force Station in Tennessee as chief engineer and special assistant to the district engineer, U. S. Army Engineer District of Mobile, Ala. He is a consultant on planning, design and construction of aerodynamic research and support facilities at the Arnold Engineering Development Center. He and his wife reside in Tullahoma, Tenn.

A news release regarding the 94th Annual Meeting of the A.I.M.E. which was held in Chicago on February 14-18 notes that **T. F. Plimpton** of the Inland Steel Company is a member of the local committee which planned this large meeting. . . . The news that **James Smith McDonnell** was a Guggenheim Medalist for 1963 has just come to your secretary's attention. The citation given to Jim at the time of the reward reads as follows: "For lifetime contribution of outstanding nature in the design and development of military aircraft, and for pioneer work in space technology." . . . The Boston Sunday Herald of February 7, 1965, carried on its financial page a rather comprehensive article on odd lot stock trading, as prepared by **Garvin A. Drew,** President of Drew Investment Associates, and pubblisher and authority in the investment field. . . . **Ave Stanton,** who must read every page in the Boston Sunday Herald, sent me a clipping indicating that Miss Susan Detweiler of San Anselmo, Calif., has recently become engaged to **Maxey Jarman's** son, a graduate of M.I.T. with the Class of 1953. Ave went on to say that he is currently chairman of the Natick, Mass., Industrial Development Committee and will be glad to hear from any of you who are looking for desirable plant locations.

Several news clippings have been received regarding furnishings of the Sheraton Boston Hotel, soon to open in the new Prudential Center in Boston. All of the planning for these furnishings has been under the direction of **Mary Morrison Kennedy,** Vice-president of Decorating Design and Architecture for the International Sheraton System. . . . Finally, among address changes recently received is one that notes that **Alan W. Crowell** is now in Fort Worth, Texas, after having been located in Hartford, Conn., for many years.—**F. L. Foster,** Secretary, Room E19-702, M.I.T., Cambridge, Mass. 02139.

'26

The lame back continues to keep us from going out to Pigeon Cove weekends but plans for the new "Class of '26 headquarters" out there are proceeding under full steam. At least the architect's bill appears in the mail once a month. Your class secretary's principal objective is to have the place completed so the class can all come out for a visit at the time of our 40th Reunion in order to carry back a mental picture of the source of these notes, and perhaps be inspired now and then to write the old boy who has to see that they get in once a month. . . . One such inspired soul is **Guy Frisbie** who dictates on plane trips on a portable machine. I wonder

how he gets away with it because portable radios are taboo on planes. Here is Guy's recent communique: "Dear George: One of the problems that I think we all face is that we never have time to do all the things we would like to do. As evidence of my own failing in this particular respect let it be said that this letter is being dictated on Delta's Flight 744 somewhere between Louisville and Dayton. I find I can get more work done in the air or as a passenger in an automobile than I can in my own office. May I make reference to your kind remarks in the class notes which appeared in November, 1964? In said notes you commented, 'I thought of Guy Frisbie right after breakfast and his wonderful machine called the disposal.' First of all, may I say that I am delighted that you thought of me and fully appreciate the many nice things you have had to say about Hobart and Kitchen Aid machines. Secondly, may I say that if someone from General Electric has not already threatened you with legal action and dire consequences for your reference to 'disposal' in connection with our machine, it is a sure sign that they do not read your class notes. Unless I am badly mistaken, 'disposal' is a G.E. trademark. You may be the cause of it becoming completely generic to the point where they have lost all rights to it as an exclusive trademark. Arrived home to find your nice card and wonderful picture of Heidi. Hope your back is greatly improved! All the best. Sincerely, Guy." Take heed, you non-writers, and dig out your dictating machines.

A note on **Howard Humphrey**'s Christmas card prompted a call to him in Wilmington on the DuPont tieline because I couldn't read his writing and did not want to misquote him. After reading salesmen's trade reports for 20 years, this doesn't sound complimentary to Howard's script but actually it was just one word I couldn't read and had I copied it wrong, he would never have written again, so here is the correct version: "I had the experience of being slowed down by a hernia operation last summer which curtailed the grass care and gardening which I enjoy as a hobby. Still a forced vacation in country surroundings has its pleasant aspects. We acquired grandparent status this year with a daughter to John and his wife who live now in Beverly, N. J. David has married his German sweetheart whom we met and liked when we were in Europe last fall. Howard." . . . If this were not so important I would be inclined to say "Ho-Hum 'Drape' has been awarded another medal" but doggone it, here it is right in The New York Times. "Eleven men were named today by President Johnson to receive the National Medal of Science. The National Medal of Science was established several years ago by Congress. The awards based on recommendations of a Presidential committee, are made annually to persons who, in the judgment of the President, 'are deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical or engineering sciences. Dr. **Charles Stark Draper** is a leader in developing aeronautic and astronautic instruments and controls. He is head of the department of aeronautics and astronautics at the Massachusetts Institute of Technology." Of course, we are thrilled at every one of these honors bestowed upon our esteemed classmate but we are getting worried too. He once told us that he has a room in his home where he keeps the medals and every time we hear of a new addition we expect that room to go crashing into his basement. Don't you think we could start a fund to supply extra lally columns to support this room and prevent such a disaster? Meanwhile sincere congratulations from the class to Stark Draper!

We heard from **Al Entwhistle** recently. He is still located in Louisville, Ky. (114 Tribal Rd.). Al's postscript on his note was "Hope to see you at the 40th!" This 40th is starting to catch on already! Al is the second classmate in a week to have mentioned it. . . . Here is a news release that should just about use up our space for the month: **"Walter E. Lobo** of 2 Stoneleigh Park, Westfield, N. J., a New York City consulting chemical engineer, has been elected president of United Engineering Trustees (U.E.T.), Inc., Ernest Kirkendall, secretary and general manager, announced today. U.E.T. owns and operates the United Engineering Center, United Nations Plaza, New York, and is responsible for the Engineering Societies Library and Engineering Foundation. U.E.T. was established in 1904 (a year that must sound familiar to many '26ers) and is administered by trustees appointed by the American Society of Civil Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, The American Society of Mechanical Engineers, the Institute of Electrical and Electronics Engineers, and the American Institute of Chemical Engineers. Mr. Lobo, formerly Director of Chemical Engineering Department of the M. W. Kellogg Company, has been a consultant in private practice since 1957."

I talked with **Don Cunningham,** the 40th reunion chairman, the other evening and the local committee plans to get together soon. Actually, we have almost a permanent organization that picks up where we left off last time but there is still much detail and a year in advance is not too soon to get rolling. Any suggestions you have will be most welcome and sincerely appreciated and since you have my address, shoot them along to me and I'll give them to Don and his committee. As you know, the Hotel Belmont at West Harwich has been reserved, so we are all set on location. It has ideal facilities for just sitting around and shooting the breeze but golf, swimming, tennis, etc., are also available. Let's hear what else you have in mind. Cheerio until May!—**George W. Smith,** Secretary, E. I. duPont de Nemours and Company, Inc., 140 Federal St., Boston, Mass.

'27

The indestructible **Glenn Jackson** has agreed to take over the writing of the classnotes for the remainder of this spring, while the class secretary and wife are in Spain and Italy. The only condition which he imposed was that I write postcards to him to quote in the notes, which I will surely try to do, although I doubt that any travel items will be of much general interest. Anyway, thanks, Glenn, for taking this on. Send notes regarding our classmates to him at P.O. Box 83, Amherst, N.H. 03031. . . . **Noel L. Flint,** who was in Course IV from 1925 to 1927, has died in Chicago after a notable career. He designed the Alexander Hamilton memorial in Lincoln Park and the Pump Room in the Ambassador East Hotel, both in Chicago, the Wilshire store, Los Angeles, and the Famous-Barr store, St. Louis. He is survived by his wife, whose address is 40 W. Schiller Street, Chicago. . . . In the notes of November, 1962, we recorded the appointment of **James Van Derpool** as executive director of New York City's Landmarks Preservation Commission. He has recently served as a member of the committee for Gracie Mansion, Inc., which has set the wheels in motion for the addition of a wing to the mayor's official residence. The committee was shown in a picture in The Herald-Tribune in front of the Mansion. . . . **Royal M. Frye** (another of our '27ers who is in Who's Who) is the first president of Belknap College in Center Harbor, N. H. Formerly, he was dean of the College of Advanced Science at Canaan, N.H.

Dick Cheney is the executive director and general manager of the Glass Container Manufacturers Institute with offices at 99 Park Avenue, New York City. His career has been very interesting. I don't think that I appreciated that he is a touch younger than the rest of us. He was graduated from Tech at 20. His first 10 years after graduation were spent with the Hobart Manufacturing Company in just eight different cities. He became assistant sales manager. Then followed a tour as editor and publisher of Pacific Purchaser Magazine, followed by work with a management engineering firm, which in turn led to the assignment with the Glass Container Association. This organization dissolved in 1944 and Dick went with Safeway Stores in container and packaging purchasing, but two years later Glass Container Manufacturers made Dick their west coast manager. Eleven years later, he took over the top job in G.C.M.I. All this time he has been most active in M.I.T. affairs: visiting committee on food technology, honorary secretary of the San Francisco area, president of the Northern California Club, director of the M.I.T. Club of New York. Somewhere in between, he found time to write two books and over 50 articles about the glass container industry. . . . No new addresses this month.—**Joseph S. Harris,** Secretary, Masons Island, Mystic, Conn. 06355.

'28

Fodder for this column ran thin this month, so a bouquet to **Walt Smith** for sending in the following item about Dick Hoak, published in the ASTM Materials Research & Standards for February 1965: "The Max Hecht Award for 1965 was presented to **Richard D. Hoak,** senior fel-

low, Mellon Institute, 'in recognition of exceptional contributions in the fields of industrial water and industrial waste water, including development of improved processes, analytical methods, and instrumentation; and in recognition of many years of outstanding service on Committee D-19. . . .' The award is given annually to a member of A.S.T.M. Committee D-19 of at least three years standing, who has performed some outstanding work in the committee or in the field of industrial water. This year it was presented at a testimonial luncheon held on January 26, at West Palm Beach, Fla. Dr. Hoak, a native of Lancaster, Pa., received his B.S. and M.S. degrees from the Massachusetts Institute of Technology, and his Ph.D. from the University of Pittsburgh. In 1941 he assumed his present position with the Mellon Institute. He is a professional engineer, an authority on methods of preventing stream pollution, a member of the national water policy panel of the Engineers joint Council, and a member of the Pennsylvania State Chamber of Commerce pollution abatement committee, Dr. Hoak is the author of more than 80 technical papers and holds three patents. He is a member of several other national societies in addition to A.S.T.M."

From an October, 1964, issue of The Sentinel, published in Lewistown, Pa., we learn that **Merrell R. Fenske,** professor and head of the department of chemical engineering at the Pennsylvania State University, was named to receive the Redwood Medal, the highest award of the Institute of Petroleum. "He was presented the award in London, England, on November 5, where he addressed the Institute on 'New Chemicals and Fuels by Oxidation.' A reception and dinner in honor of Dr. Fenske followed the presentation. Dr. Fenske was chosen for the honor, G. H. Herridge, president of the Institute explained, 'for his contributions over many years to the world-wide petroleum industry.' He was the 12th recipient of the award and the first United States citizen to receive it since it was established in 1921 in honor of the founder-president of the Institute of Petroleum, Sir Boverton Redwood. The Institute, which was founded in 1913, is a worldwide organization with headquarters in London. It represents all branches of the industry. Dr. Fenske has been a member of the Penn State faculty since 1929 when he was named to the department of chemical engineering. Among his many and varied duties was the assignment of developing co-operative research programs with industry and government, and also of performing research to help the Pennsylvania petroleum industry. He has directed the Petroleum Refining Laboratory, established to assist the refiners and marketers of Pennsylvania oil to meet the complex automotive, industrial, and military requirements for petroleum products. This laboratory is a part of the department of chemical engineering which Dr. Fenske also heads. A graduate of DePauw University, Dr. Fenske received his doctor of science degree in chemical engineering at M.I.T. DePauw has also awarded him the honorary doctor of science degree. The research programs he heads have aided industry and agencies of government in solving many of their technical problems. These have also been a training ground for undergraduates and graduate students. Over the years, the research programs have grown and now include new chemicals, new processes and reactions, saline water conversion, lubrication, and combustion as well as work on automotive fuels and lubricating oils of various kinds, military aircraft lubricating oils, hydraulic fluids for the Army, Navy and Air Force, and most recently, hydraulic oils and special lubricants used in missiles and space vehicles."

We get some odd change of address notifications from the Alumni Register. For instance, **Rene Simard,** 130 Kamloops Avenue, Ottawa 10, Ontario, Canada, must now be addressed as "Dr.". Will Rene please explain. . . . We have also been notified that **A. Wentworth Erickson, Jr.** is now a resident of Matthewtown, Inagua, Bahamas, apparently having moved there from Weston, Mass.; and a notice two weeks earlier tells us that Erickson moved to Weston, Mass., from Swampscott, Mass. . . . A conventional notation of change of address places Dr. **Evan Lewis** in 111 Sixth Ave., Collegeville, Pa., having moved there from Newark, Del. . . . And **Ed Pitt** has moved to Apt. 2 at 113 Bay State Road, Boston, after having lived in Weston, Mass., for some time. . . . We expect to hear almost any day now that **Desmond Shipley** has changed his address to Tahiti. He has the most unique plan of any we have heard. Upon retirement as a captain pilot for American Airlines out of LaGuardia Airport, he plans to spend half his time in southern California and the other six months in Tahiti. His charming wife thinks this routine should make for a twelve months' picnic, and we all must agree. . . . Not a word from **Jim Donovan** this month.—**Hermon S. Swartz,** Secretary, Construction Publishing Company, Inc., 27 Muzzey Street, Lexington, Mass. 02173.

'29

Continuing with material from the questionnaires, let's turn the spotlight on our friends from Ohio, from which area we received eight replies. In Cleveland, we find **George Badger** who is professor of biostatistics and director, Division of Biometry, Medical School, Western Reserve University, having achieved an M.P.H. at Johns Hopkins in 1932, and an M.D. at the University of Michigan in 1938 . . . **T. J. Ewald, Sr.,** writes from Cleveland also, where he is a time study engineer for Harris-Seybold Company. . . . **John Dreyer,** President and Research Director, Polacoat Incorporated, in Montgomery, Ohio, sends his best regards to all his M.I.T. friends. After 15 years in research at Formica, he started in his own business with a new process for producing light polarizers, made 3D glasses, and has developed a rear projection screen, Lenscreen. He also adds news of other '29ers—**Lester Carter** is at Formica in Cincinnati, Ohio; and **Hank Gibbons** is at Vought Sikorsky, Dallas, Texas. . . . From Middletown, Ohio, we heard from **Charles Denny,** who is president of Barkelew Electric Manufacturing Company with whom he has been associated since 1932. Charles vacations in the Florida Keys and Eastern Bahamas where he must certainly indulge in his hobbies of golf and fishing . . . Painesville, Ohio, is the home of **George McDaniel** where he is a technical serviceman for Diamond Alkali Company, his work being concerned with sodium silicates. He has several U.S. patents to his credit. George speaks of retirement shortly but with interests in music, economics, part-time consulting, religious and social problems, stock market and writing, believes he will find enough to keep busy. . . . When **Virgil McDaniel** filled out his questionnaire at the Reunion, his address was listed as Perrysburg, Ohio, but now we have a change of address to Short Hills N.J. In Ohio he was division president, Coated Fabrics Division, Interchemical Corporation. Having worked in the Ohio oil fields, Dewey and Almy Chemical Company, Chrysler Corporation and Inter-chemical Corporation in various sections of the country, he sums it all up by saying, "Work is even more fun than playing." Would like to hear what you are doing in New Jersey, Mac. . . . As of December 31, 1963, **George Long** of Dayton, Ohio, has been retired and we trust is enjoying his hobbies of golf and photography. . . . In Cincinnati, **Jerome Franks** is president of Husky Division, Burndy Corporation and he is a member of the Engineering Society of Cincinnati.

Our most faithful reporter, **Mary Mead,** sends word that **Ted Malmstrom,** who was seriously injured in a car accident in December, was expected to be transferred from the Rochester Hospital to his home at 205 Greenland Avenue, Needham Heights, Mass. Good luck to you, Ted, for a fine recovery. . . . Mary also sent a news clipping of **Marshall David**'s participation in the ribbon cutting ceremonies of the New England Industrial Trade Fair at Suffolk Downs, as a representative of the Greater Boston Chamber of Commerce. . . . Other '29ers are making headlines in the newspapers, **Floyd Buck,** who is one of three division chairmen of this year's United Fund—Red Cross Campaign in New Haven, Conn., where Floyd is engineering manager for the United Illuminating Company . . . Congratulations to **Robert Cowan** of Bernardsville, N.J., who on June 4, 1964, was the recipient of the Newark College's Allan R. Cullimore Award for Distinguished Service. Robert is chairman of the Board of the National Newark and Essex Bank and vice-chairman and treasurer of the board of trustees of Newark College of Engineering.

We end this month's news with a sad note of the passing of Dr. **William R. MacLean** on December 22, 1964. He was professor of engineering at Brooklyn Polytechnic Institute and had a most impressive history of accomplishments in electrical engineering. He is described as a man of great energy and learning and he devoted much of his time to research in the fields of electronics, acoustics, elec-

tromagnetism, microwaves, satellite solar cells, the hazards of swimming-pool lighting, radar, the defects of electric heating pads, electrical capacitators, optics, sound waves and the magnetic inspection of inaccessible pipes. . . . My best regards to all.—**John P. Rich,** Secretary, 67 Berkeley Street, Nashua, N.H.

'30

Plans for our 35th Reunion at Oyster Harbors on June 11 to 13 are proceeding apace. By the time these notes appear you will probably have received a first mailing. In a recent telephone conversation with Joe Harrington, I learned that the following classmates have already accepted membership on the Reunion Committee and others may be added: Al Burling, Yicka Herbert, Ed Kingsley, George Lawson, Hijo Marean, Bob Reynolds, Herman Scott, Greg Smith, Reg Tarr and George Wadsworth. We hope that a substantial number of those attending the reunion will stay over for the Alumni Day activities on June 14. I understand that for those who make an early decision, on-campus accommodations may be available. . . . This month we have an especially interesting report from **Bill Howard,** who has moved from advertising (J. Walter Thompson) into a job as private enterprise advisor with the U.S. Agency for International Development, familiarly known as A.I.D., in Taiwan. His new job can best be described in his own words: "Working with businessmen and government officials, my job is—in broad terms—to promote greater exports. In Taiwan (Formosa) an alert, aggresive business community makes, or can make, anything from aborigine handicrafts to ultra-advanced electronic devices. We try to improve these products, find markets, dream up others. Chinese executives are especially hungry for advertising and promotion information. Through individual contacts, or through small or large groups, we try to advise and assist people whom it is a pleasure to aid. We're happy in a beautiful part of the world, with broadening and deepening friendships among our hosts and other 'guests.' I have a new appreciation for the job U.S. Foreign Service officers do, and am most grateful for the splendid help I receive from the fine staff of the U.S. A.I.D. China Mission." Bill is active in the Taipei Rotary Club, a "100-member club with only about 25 non-Chinese." He says there is no sailing in Taipei and he has been forced to take up golf. The Howards have a married daughter, Susan, and a son, Jonathan, who is a special student at Tunghai University in Taiwan. Bill's address is Box 7, U.S. A.I.D./C APO, San Francisco 96263.

Arthur Wildes is principal of the Utica Free Academy, a public secondary school with more than 3,000 students. He has lived in Utica since 1931, with the exception of a brief interlude with Naval Ordnance in World War II. He started teaching in the high school, moved into counseling in 1942, and became principal in 1958. He has a married daughter, Nancy, and two grandchildren. His son-in-law is a nuclear physicist who is currently at the University of Nagoya on a Fulbright Scholarship. . . . **Bert Whitten** is construction planning engineer with the Boston Gas Company. He has two children: daughter Jane, who graduated from Jackson College (Tufts), received an M.S. in Science Teaching from Columbia and is a biology teacher, and son Bertwell, who graduated from Middleburg and is now on a teaching grant at Purdue and working toward his Ph.D. . . . **Dick Whitehead** is director of planning for the County of Santa Barbara, Calif. His department "processes subdivisions, administers zoning regulations, maintains economic and population statistics, and prepares forecasts for the Planning Commission and Board of Supervisors and Master Plans for the future development of the County." He is active in the American Institute of Planners and is secretary-treasurer of the California County Planning Directors Association. . . . **George Lawson** has been named "products manager—transformers" for the Lighting Products Division of Sylvania Electric Products, Inc. . . . **Sidney Kaye** has been elected president of the Suffolk Grocery Company of Boston and a director of the Commonwealth National Bank. . . . **Ralph Peters** has been made chairman of the Paper and Paperboard Manufacture Division of TAPPI. I hope to attend the M.I.T. luncheon of TAPPI later this month and report it in next month's notes. . . . At a recent annual convention of the American Association of State Highway Officials in Atlanta, **Beverly Ottaway** received a citation of merit. The presentation was made by Massachusetts Department of Public Works Commissioner Fitzgerald. Bev has been with the D. P. W. for more than 30 years. The Ottaways live in Wellesley Hills, where Bev is secretary of the Planning Board, a member of the Meistersingers, Weber Quartet, Consistory Choir and tenor soloist at the Belmont Congregational Church. His wife is Red Cross Motor Corps chairman for Wellesley, an item of special interest to your secretary, since Marion has the corresponding job here in Harrison. . . . The Alumni Office has reported that **Dick Huggard** died on January 20, 1965. No recent details are available, but I have an information form that Dick returned to me several years ago which indicates that he and his wife Muriel lived in Winnipeg, Manitoba, with their two children, Richard and Shelley, who would now be about 21 and 19, respectively. Dick was a distributor of contractors' equipment. He was a member of the Educational Council and an Honorary Secretary of M.I.T.—**Gordon K. Lister,** Secretary, 530 Fifth Avenue, New York 36, N.Y.; Assistant Secretaries: **Charles Abbott,** 26 Richard Rd., Lexington, Mass.: **Louise Hall,** Box 6636, College Station, Durham, N.C.; **Ralph Peters,** 16 Whitestone Lane, Rochester, N.Y.

'33

Hang onto your hats, fellas and gals, here we go again. I have some material but half of it is changes of address. . . . A note from **Jim Vicary,** Erie, Pa., tells almost nothing about himself, except that he is a grandfather for the fifth time. A man may have much pride in being a grandfather, but it is not listed as an accomplishment. Good work Jim! Jim, however, mentioned our executive vice-president, **Jim Turner,** who has been elected to the Board of N.A.M. O.K., Jim Turner, let's have the rest of the story. . . . A card from **Bill Pleasants** covers about the same material that **Cal Mohr** sent in for the last issue, except that Bill gives me a list of addresses, in New York City, New Jersey, Ireland, and a mention of Rome, without the address: all these are available upon request. . . . Again we hear of **Bob Winters,** and again we write him up, and will continue to do so. In the fall Bob received an award from the Canadian Council of Christians and Jews for his contribution to human relations, his work in educational and community organizations, and his support of the Council. This came in the form of a clipping, and it goes on to give a short biography, with which most of us are familiar. I have a lot more about Bob but will have to save it for a time when it is raining a little harder. . . . Another clipping concerns **Bill Murray,** as co-chairman of a meeting of the Society for Experimental Stress Analysis. Not much information is given as to where or when the meeting was held, but the program is shown, in part, with a comment, which says "Plus other talks by the greatest cast of characters in the field of experimental stress analysis ever assembled." Bill is travelling in fast company, for sure. Not knowing Bill, research shows me that the only Murray listed with the class is a professor at the Institute. One paper sort of intrigues me, entitled "The Biomechanics of Aspects of Vehicular Collisions." Any Comments? No wonder **Bill Bauer** has said, "Varren, ve couldn't get into the place these days, could ve?" I will have to, now, agree, if this title is a sample of the wares. I am sure that Bill will send anyone a copy of this.

Don Fink, it seems, has moved to Mt. Kisco. This and all other addresses available upon inquiry. Don, look up an old friend, Carlo Paterno, in Mt. K; an Angus breeder, and real estate tycoon. . . . From **George Henning,** indirectly, we find that not only has George moved, but so also Belmont Smelting has moved to Roslyn Heights, it appears. Now, this one needs personal attention, so George, let me have a half page of all the facts and fancies. Many men move across town, or across the country, but few of them move the factory. George is one of our more prominent vice-presidents who, I know, will be only too glad to tell us whether or not he did move the factory or just the address. Incidentally, George and Lucy sent out a most remarkable and interesting Christmas card, and I just can't resist saying so, in print. . . . **Mal Mayer** has moved from New Rochelle to Mount Vernon; not a distance which can stand boasting, but substantial. I don't see what the move has to do with the brewery business, but maybe Mal can quiet me down. . . . Now, **Maurice Rubin** has really left

town, Hingham, Mass., to Baltimore. I can't find Maurice in Goodridge's Classic 25-year book, so will have to wait a month or so to hear from Maurice direct. What did you move for, Maurice? You owned your own house! . . . This one, I think, I can understand, but will do no guessing. **John Wiley** is no longer a resident of Connecticut. John, as you may recall, is the airport fellow. John may be finding out about the diminishing returns on tax savings in other states, but, my guess is that he has about reached the age when one finds out that two can live as cheaply as two more, but only by moving out of the big house into an apartment. Good for you, John; now you can walk to the office.

In the nick of time comes now a small, but select handful of clips, for which we are grateful. We have here three clips on **J. George Shuman,** who has just been made vice-president of process and production technology of the Technical Tape Corporation, of Old Bridge, N. J., which make, among other things, industrial tapes, and plastic household items. After much research, J. George turns out to be Joseph Shuman. These chaps really seem to enjoy making me find out who they really are. The Goodridge 25-year manual makes no mention of this fellow, but the Centennial Register caught up with him. Now, George (or Joe), why not drop me a line and confirm the above. . . . Professor **Forrest P. Dexter, Jr.,** of Union Junior College, was guest speaker at a meeting of the Cranford Business and Professional Women's Club in November. He discussed financing a college education. This subject is particularly close to Forrest as he has charge of all scholarships given by the school, and also handles all State and Federal loan business for the school. A short biographical sketch is available to any of those further interested. Forrest has been busy, having a masters' degree from fair Harvard, and having done advanced work at Brown and Rutgers. . . . Now comes the irrepressible **Chuck Fulkerson,** from Waterbury, Conn. About all that we can add to that which we have already published is the fact that his company continues to grow, in a very highly competitive field, all as a result of capable and resourceful management. Chuck is also very active in civic and community activities, which doesn't surprise me at all, as we find these two items in most all of our good men. Great work, Chuck. I am proud to know you.

At long last, I am now privileged to expand a little on the plans for the May—Chicago Regional Class Reunion. By the time the boys read this, they will know all about it anyway, but, maybe not all. Someone allowed that if you wish to get something done, give it to a busy man. Cal Mohr is now into this thing all over, and Cal is a busy man. Cal has appointed his committee, chosen from an area covering a radius of 300 miles from Chicago. Letters to all classmates within this great area will already have gone out. That 300-mile radius takes in St. Louis, Louisville, Detroit and Toledo, to say nothing about some places I never have heard of. This ought to catch **Steve Crick,** with an airport just outside the door. **Al Moeller** may not make it from Connecticut although maybe he will show up here. Here, by the way, is Pheasant Run, 45 minutes west of the Loop, 10 minutes from O'Hare. From anywhere at all, the Freeways, and Tollways make getting to Pheasant Run a mighty easy try. Please note the date, which I do not have at hand, at this moment, but it is most convenient; first because it is late enough so that the weather is usually fine, but early enough so that no classmate can use this occasion to replace Alumni Day at Cambridge. We arranged the New London meeting of last year so that any or all could make Alumni Day easily. In no other case will we do it that way, but will fix them all so that there will be no conflict whatever with the big day at Cambridge. I had better cut this out, or I will be getting too enthusiastic. I hope to see a lot of fellows that are not seen often enough. We may even have to get out an extra edition of The Review.

More from Cal Mohr: He mentions, and very, very properly so, the fine and unusual Christmas card from Lucy and **George Henning,** the "Joy Joy Joy" card. So, with Cal asking me to describe it, I can't find the card. My face is a bit red, Lucy and George. But I have all of them for some years. . . . **Charlie Thumm** now has another establishment, Cochise Lodge and Guest Ranch at Elfrida, Ariz. Allowing myself five days at Thumm per mention, I now have 20 days credit, so make a note of it, Chuck. Charlie's son is now a senior at Northwestern, and his daughter has recently presented him with a grandson. Welcome to the club, Charlie, but Cal has the ground rules slightly awry. The Grandmothers Club, of which there are no members as yet, is exclusively for the 1933 girls, and not for the wives of male classmates. . . . **Fred Kressman,** Continental Turpentine and Resin Company of Shamrock, Fla., wrote to Cal. His older daughter is a graduate student at Florida University, and the younger is an undergraduate there. His son in California, has made Fred a grandfather twice over. . . . Cal, I have great hopes for your visit to Houston. The spot off the Peruvian Coast where the fishing is tops is Cabo Blanco. The largest fish ever caught on rod and reel was a 1,560 pound black marlin. It was recently presented to the Smithsonian Institute. The most fish I have ever seen, and the greatest variety, was in and near the Archipelago de Las Perlas, right in the center of the great Golfo de Panama, and I have fished on four continents. However, as you read this I have cancelled out my South American trip on account of too much flu at just the wrong time so I will see no classmates, and this I do regret.

Word just received tells us of the passing of two classmates; **William H. Keith,** of Newark, N. J., and **Harold P. Towle,** of Ridgewood, N. J. We, as a Class, offer our most sincere sympathy to those loved ones who survive. . . . Just to clear the record, we have one more item; a partial quotation from one of Bob Winters' speeches, delivered in Canada. We have Bob's permission to quote anything we wish, so, in a speech on education, we find: "Even today, half of what an engineer has learned will probably be obsolete in less than a decade—another half simply is not now available to him. An engineer taking his undergraduate degree in the years prior to 1950, would have but a brief introduction, if any, to nuclear, feedback control, and inertial-guidance, computer technology, and its application." Bob finishes by announcing "What we will soon need are colleges to re-educate our college graduates." That's it and, Chicago men, watch ahead for Pheasant Run; O'Hare 10 minutes away. —**Warren Henderson,** Secretary, Fort Rock Farm, Exeter, N. H.

'34

News is rather scarce this month; there is little mail and a disposition to hibernate until the snows are over here in the northeast corner. On February 6 and 7 Johnny Westfall and wife visited **Charlie Lucke** and although they stayed up talking until 3 A.M. no news was generated—they were talking depreciation allowances! . . . **Jim Eder** has been flying around the upper atmosphere and landed in Hong Kong on business. There he ran into classmate **Y. T. Chiu** and the following letter resulted: "I thought you'd like to hear news of Y. T. Chiu, who remembers you well in our joint mechanical engineering courses. Y.T. took me to two exotic lunches on successive days. (Prepared water lily seeds, floating restaurants, and correspondingly drab Chinese decor allowed me to give full attention to what he was telling me!) Y.T. has had an eventful 30 years. He worked first in Canton in a fertilizer plant, then a paper mill. He was a bit "put out" when the Japanese bombed his paper plant; in fact he left Canton the day before the Japanese entered the city in the undeclared war of 1938. When safely in Hong Kong, the Japanese tried to induce him to work for them. But Y.T. is a man of principle who enjoys problems. He flew to the interior to build a 20-ton a day pig iron plant for the National government. This small capacity was vitally needed for grenades, etc. Y.T. had first to manufacture common brick, which trick he learned from a handbook. Fortunately he could steal fire brick destined for locomotives which by that time were bombed out of business. Y.T.'s predecessor, a U. S. trained civil engineer, had built a building but it had fallen down—he wasn't from M.I.T. With the pig iron plant a success, Y.T. became operating engineer of a larger sugar mill. With the war over in 1945 he returned once more to Canton to build a new paper mill for the government. He had four years of solid peace, but had to leave again for Hong Kong when the Communists took over. He lost all his property and so had to start from scratch 15 years ago, except by then he had six children! How he was able to succeed is something you don't learn in class. After not being treated too well at a Chinese owned steel plant, he joined Caltex and became a

brilliant senior sales supervisor for their sizeable industrial operations here. From his reticence of student days he has developed a dynamic outgoing personality. His philosophy is that if there were no problems his company could get along with less capable executives. His wife's pluckiness and fight have helped greatly. She came from an aristocratic Cantonese family. My bet is that all six children will go to good North American colleges with most getting a master's degree. The eldest is now resident doctor in surgery at the hospital in Youngstown, Ohio. The only daughter is at MacDonald, part of McGill. Y.T. was one of 13 children, nine boys and four girls. Almost half were caught in Red China and they dare not try to visit Hong Kong. Likewise Y.T. doesn't want to visit them for fear of overstaying his welcome. **P.T. Ip,** also now in Hong Kong, worked in reconstruction in Canton after 1945 in the operating end of U.N.R.A. Now he has a rubber business and a furniture business as well as delving into lumber in Borneo. Since he has only one daughter he can think of retiring soon. Sincerely, Jim."

We received this note from Mrs. **Israel Nigrosh** dated November 14, 1964: "This is in the nature of a thank you note, somewhat delayed, to be sure. We received the handsome teleplaque commemorating the 30th Reunion of the Class of 1934, and it hangs in Skee's study at home. As you may know, our reservations were in, and our plans all made. However, our younger son, Barry, underwent an emergency operation the very morning we were to leave for the Cape. All's well that ends well, and Barry is better than ever, and hard at work back to Colombia College in his junior year—while Leon, our older son, who 'held our hand' during the ordeal, is at Rochester Institute of Technology for his M.F.A., and doing some teaching in ceramics at the same time. We appreciate the thoughtfulness of **Bob Becker** and the rest of the reunion committee in sending the plaque—and Skee and I look forward to the 35th. Sincerely, Frances Nigrosh"

This note explains why we missed Skee and Frances Nigrosh at the reunion. Glad all is now well.

I received a very newsy letter from **E. Philip Kron** recently concerning several of our classmates that he has had contact with off and on. Rather than try to rewrite Phil's information, it is passed along to you as received: **"George R. Struck** has been elected an assistant vice-president of Eastman Kodak Company and made general manager of the radiography markets division in the photographic marketing organization. It is one of five responsibility centers by class of trade. George joined Kodak's Sales Department in 1939 and specialized in industrial X-rays as a technical representative for the Eastern United States. He transferred to the Medical Sales Department in 1943. Later that year he was commissioned in the U.S. Navy and served in the Bureau of Aeronautics as an administrative engineering officer. In 1944 he returned to the medical sales staff and was appointed assistant manager of the division in 1947, and manager in 1950. He was named general manager of the division, when its name was changed to the X-Ray Sales Division, in 1961. Prior to his work with Kodak, George was associated with radio research and X-ray service firms in Chicago and with an engraving company in Glen Cove, N.Y. He and his wife, Christine, live in Irondequoit, N.Y., a suburb of Rochester. They have two children. . . . Both The Journal of Commerce and the E. and M.J. Metal and Mineral Markets carried announcements recently that **Robert Becker,** who was secretary of our class during undergraduate days, has been elected assistant vice-president of the Andes Copper Mining Company and Chile Exploration Company. Both are subsidiaries of the Anaconda Company. As you know, Bob has been mine manager of the Chuquicamata Mine in Chile for several years. My understanding is that he and his family may move down from the hills now to San Diego but he will still be in Chile.

"There are several of our classmates still living in Rochester and I see them occasionally around town. **Peter Barry** is with the Rochester Gas and Electric Corporation and continues as a city councilman but has relinquished his extra duties as mayor of the City of Rochester. . . . **Winton Brown** is with the Distillation Products Industries, a subsidiary of Eastman Kodak Company. He appears to have recovered from his serious illness and is back on the job full time. . . . **Art Fox** is at the Apparatus and Optical Division of Eastman Kodak Company. . . . **Ralph Geil** is an assistant superintendent of the Engineering, Construction, Maintenance and Utilities Division at the Kodak Park Works of Eastman Kodak Company. . . . **Ed Hartman** is in the Corporate Industrial Relations Department at Kodak Office of the Eastman Kodak Company. . . . **Eino Jaskelainen** is also with the Apparatus and Optical Division of the Eastman Kodak Company. Several pictures of his beautiful and unusual suburban home were on display recently at the Midtown Plaza, Rochester's nationally known urban redevelopment project. . . . **Lee Rusling** continues in his brokerage business, Howe and Rusling, Inc., in Rochester. . . . **Roy Thompson** is also with the Eastman Kodak Company in Plant Engineering at the Apparatus and Optical Division of the Kodak Park Works of Eastman Kodak Company." . . . Many thanks, Phil, for the news. It is appreciated.

After graduating from M.I.T., **Ralph O. Brown** attended Boston University School of Medicine, and received a medical degree. His internship and residency were at Rhode Island Hospital in Providence, and in Providence Lying-In Hospital. Brownie was then in general practice in Attleboro, Mass., and was affiliated with Sturdy Hospital in that city. He has now become a member of a group of doctors staffing the emergency room at Wesson Memorial Hospital in Springfield, Mass. Brownie and three other doctors are known as Emergency Room Associates. They staff the facilities on a 24-hour basis. This arrangement was one of the first of its kind in the country when it was instituted at Wesson Memorial about two years ago. Brownie is also a member of the North Bristol District of the Massachusetts Medical Society and the American Medical Association. . . . **Ernest J. Greenwood** has been appointed executive vice-president of Norden Division of United Aircraft Corporation. Ernie has been with U.A.C. for 29 years, 13 of them in the Norden Division. He has been a divisional vice-president—operations since 1962. Prior to his affiliation with the Norden Division he worked in Chance Vought, Hamilton Standard and Sikorsky divisions of U.A.C.

In the Chicago area, especially in the northern suburbs, the end of January brought one of the most severe ice storms in Chicago history. Trees and utility wires were particularly hard hit, over 250,000 homes were affected, and some areas were without electric power for as much as six days. I picked this particular time for some travelling west of Chicago, which was a mistake. However, when you read these notes the landscape will be green again and the homeowners among us will be in the gardens and mowing lawns, wondering where the winter went. **—W. Olmstead Wright,** Secretary, 1003 Howard Street, Wheaton, Ill.; Co-Secretaries: **Charles M. Parker,** 3 William Street, Norwalk, Conn., **Norman B. Krim,** 15 Fox Lane, Newton Center 59, Mass., **Kendrick H. Lippitt,** 3782 Putter Drive, Chula Vista, Calif.

'35

A letter has just arrived from **William T. Barker,** setting the record straight: **"I** too, have heard the report that I was working in Fitchburg, but believe me, it isn't true! Since January 18, I have been located in Rumford, Maine, with the Oxford Paper Company. Oxford is putting increasing emphasis on development of specialty coated papers (for example a line of carbon-less multiple business forms, paper plates for offset printing masters, and vacuum metallized functional papers) to provide products yielding greater profitability than their standard line of book and magazine printing papers. My function is to head up new product development—carrying through process development, and market research stages of commercialization. I'll be back with the Class of '35 fairway strollers as usual in 1965, playing out of the Oakdale Golf Club in Rumford. This probably means missing the fun of some of the head to head matches played in the Greater Boston area in past years. My wife, Mae, did a terrific job of selling our Nashua home February 1, just five days after she listed the house for sale. We move into a new beautifully built house which we just bought in East Rumford, on Washington's Birthday. The view from our living room is breathtaking, and the possibility of visits from bears and deer in our back yard promises exciting country living. Best to you and others of the class —particularly fellow-golfers." It was good to hear from you, Bill, and we hope we will see you at Chatham Bars in June.

News from here and there: General **Frank S. Besson, Jr.,** Commanding General of the U. S. Army Materiel Command, will be the main speaker at the 10th Annual Gas Turbine Conference and Products show, sponsored by the American Society of Mechanical Engineers, to be held February 28 to March 4 at Washington, D.C. Frank received his master's degree with our class. . . . **Leo F. Epstein** is now living at 1064 Kensington Drive, Freemont, Calif. . . . **Buckley Crist** is now with R and D Contractors, 133 East Grant Street, Lancaster, Pa. . . . **Otto E. Zwanzig** is back in Vancouver at 675 King George Way, West Vancouver, B.C., Canada. . . . **Jacob Castleman** has moved from North White Plains to 380 Cliff Drive, Pasadena, Calif. . . . Ensign **Joseph T. Cook** has left Meridian, Miss., and is now at Beeville, Texas, at 806 East Anderson. . . . **Gerald W. Farr's** new address is 2205 Paradise Drive, Tiburon, Calif. . . . **Larry Stone,** (Colonel Laurence A. Stone) has come up with a new address—Hq. U.S.A. Supply and Maintenance Command, Washington, D.C. 20315. It's about time for another letter from you, Larry. . . . It is with regret that we announce the death of **David G. Greenlie** who lived at 232 Conant Road, Weston, Mass.

The following information was picked up at the latest meeting of the 30th Reunion Committtee on February 3: **Jack Colby** is taking it easy at La Orilla, Islamorada, Fla., and is looking forward to seeing everybody in June. . . . **Francis B. Sellew** has a new business address: Smith, Sellew and Doherty, 255 Atlantic Avenue, Boston. . . . The plaque that isn't there is being passed along to **Jerry Golden;** Alison Golden was born July 5, 1964, at Beth Israel Hospital in Brookline. . . . **Chet Bond** passes along the following information about himself and his family: Chet is active in the Association of General Contractors of which he was past-president of the Massachusetts branch and past-national director. He is taking his wife to the West Coast for the annual convention this spring. His company is currently working on the Mt. Auburn Hospital and Emerson Hospital additions. His oldest daughter, Ellen, 21, graduated from Laselle and is now in nursing at Newton-Wellesley Hospital; Chris, 17, is at Vermont Academy and loves skiing and football; Tony, 16, is at Canterbury School, New Milford, Conn., and his interests are in swimming and archaeology; Rosemary, 13, is in the eighth grade of the Shaw Junior High School in Swampscott. . . . Another grandfather in our class is **John Taplin,** whose daughter Marjorie married Rudy Houk five years ago. They live in Sharon and have two boys, aged two and three. . . . **Dave Cobb** has been working at Katherine Gibbs School since December 1. His daughter Judy is at M.I.T., at the M.I.T. Press. . . . Two things to remember at the 30th: ask Jerry Golden about "bells ringing" and **Art Zich** about "beep-beep". See you all there.—**Allan Q. Mowatt,** Secretary, 61 Beaumont Avenue, Newtonville 60, Mass.; Regional Secretaries: **Edward A. Edgar,** Kerry Lane, Chappaqua, N.Y.; **Hal L. Bemis,** 510 Avonwood Road, Haverford, Pa.; **Edward J. Collins,** 904 Merchandise Mart, Chicago, 54, Ill.; and **Gerald C. Rich,** 105 Pasatiempo Drive, Santa Cruz, Calif.

'36

As you probably all know one source of news for the class notes is clippings supplied by the Alumni Office. Along with a current announcement that **Raymond B. Healy** has joined the Liggett and Myers Tobacco Company as media co-ordinator in the advertising department were two other clippings which must have been sidetracked. Although they are a year old they were of interest to me and I will share them with you. **Louis B. Wetmore,** Professor of City and Regional Planning at the University of Illinois, testified as an expert witness at hearings on a proposed housing development in Elk Grove Village, Ill. By now it is probably completed. . . . **Brockway McMillan,** Undersecretary of the U.S.A.F. for Research and Development, addressed the Mathematical Association of America on "Information Theory." He was director of military research at the Bell Labs and also served with the A.E.C. and Office of Scientific Research and Development. He is a past president of the Society of Industrial and Applied Mathematics. . . . **Mrs. Theodore C. Swartz (Ethelyn Trimbey)** has moved to Clearwater, Fla.—1318 Keene Road. . . . Your secretary had a delightful week at Sanibel Island, Fla., soaking up sun and information. The occasion was a symposium honoring Professor Robert Mulliken, '17, and son of Professor Samuel Mulliken of the class of '87 of the University of Chicago. George was asked to be a discussion leader and I went for the ride.—**Alice H. Kimball,** Secretary, 20 Everett Avenue, Winchester, Mass. 01890.

'37

Henry J. Stuart has been named director of quality control at General Dynamic, Pomona. . . . **Theodore A. Weyher,** Dean of the University of Miami School of Engineering since 1957, will retire next August 31 with the academic rank of Dean Emeritus. . . . Connecticut Congressman-at-large **Frank Kowalski** was the featured speaker at a dinner honoring Representative Joseph G. Minish of Orange, N. J.—**Robert H. Thorson,** Secretary, 560 Riverside Avenue, Medford, Mass.; **S. Curtis Powell,** Assistant Secretary, Room 5-325, M.I.T., Cambridge, Mass.; **Jerome Salny,** Assistant Secretary, Egbert Hill, Morristown, N. J.

'39

Mary and **Martin Lindenberg** forwarded a February 10 clipping from the New Bedford Standard Times about **Francis Sargent:** He has been appointed head of the Massachusetts Department of Public Works, by Governor Volpe. Francis was serving as Associate Commissioner, and has accepted the top job on an interim basis while a career expert is being sought for this highway engineering and administration top spot in the Massachusetts government. As one of the Associate Commissioners, Francis had been responsible for the D.P.W.'s Division of Waterways. Another item in the same clipping reported that Mr. Sargent had declined an offer from the State of California to become its Director of Parks and Recreation, stating that "I feel my roots and future are in Massachusetts." Francis was also quoted widely in an article in The Christian Science Monitor for January 27, entitled "U.S. Zeroes in (on) Conservation Targets," and prompted by President Johnson's state of the Union message in which the President referred to the need for conservation. The Monitor described our '39 classmate as "a longtime conservationist and an architect. He directed the research for the Outdoor Recreation Resources Review study submitted to President Kennedy and Congress in 1962." In expressing thanks to the Lindenbergs for sending me the Sargent clipping, I can bring you up to date on Martin's activities. In New Bedford, Mass., he owns a 240-loom weaving plant, specializing in synthetic fabrics, and is currently engaged in further expansion. Summers, he and Mary cruise New England waters in their auxiliary sloop, and are active in the New Bedford Power Squadron.

Ben Howes is another '39er eagle eye, watching out for classmate activities. He sent a clipping from Metalworking News of December 28, 1964, with an excellent story on **Bill Brewster,** President of United Shoe Machinery. Datelined Boston, the lead paragraph states that "Bill Brewster, whose forefathers helped pilot the Mayflower to Plymouth, is now charting United Shoe Machinery Corporation on a course toward greater diversification." And then the article continues: "The 47-year-old president of the giant United Shoe Machinery Corporation, William S. Brewster, couples youthful vigor and imagination with technical know-how. In buying 18 firms here and abroad since 1960, he and the company have learned a great deal about acquisitions. As reported earlier in these columns, Bill spent much of his time in the international division of U.S.M., and was appointed vice-president and director in 1958. He was named president of the company in 1961. . . . How about Ben Howes himself? Ben joined Ford Motor Company in 1955, in gas turbine design. During 1956 he conceived and started development of the unique two-spool 300-hp gas turbine for trucks. He was made associate director of engineering research in 1957. Now he is a manager in chassis design, with the responsibility for the mechanical components that go into next year's line of cars. Ben and Anne and their four daughters live in Birmingham, Mich. . . . And what is everyone else doing? Now that Spring is here perhaps we shall hear from more of you. Until

next month.—**Oswald Stewart,** Secretary, 3395 Green Meadow Circle, Bethlehem, Pa. 18017.

'40

By now all of you should have received the first mailing in regard to our Reunion on campus at Tech on June 12 through 14. We will stay at the Baker House, and children will be housed on separate floors with professional counselors. In the past, the number of children at the reunion has frequently exceeded the number of parents. Many of the children's activities will be split into three groups according to age—under 9, 9 to 12, and 13 and over. There is no need to bring your car since buses will be supplied when transportation is required. Off campus activity will be at the Essex County Club at Manchester, Mass., on Sunday. There are facilities for golf, swimming, tennis, softball, and putting. Any classmate who has not received the questionnaire but who plans to come should write to **Hap Farrell,** Valley View Road, Weston 93, Mass., letting Hap know whether you will be accompanied by your wife and how many children. . . . **Bob Bittenbender** is chairman of the Reunion Committee and **Doug Eckhardt** is treasurer. Other members of the Committee are Jim Baird, John Danforth, Russ Haden, Ed Kingsbury, Frank Penn, Dick Robertson, Wally Schuchard, Bill Stern, Arnie Wight, and Alvin Guttag. . . . Our 25th Reunion Gift to the Institute is making strides toward its goal of $250,000. As of Feb. 2, the grand total was $194,700. In honor of **Karl Pfister,** who is executive director of Developmental Research in Merck, Sharpe and Dome's research laboratories, the parent corporation has granted $25,000 to the Institute to provide for an annual visit by a distinguished scientist to be selected by Tech. Karl was honored for his leadership in chemical research and to record his scientific contributions in the field of medicinal chemistry. He has been a leader in the development of compounds for the treatment of high blood pressure and in research on sulfa drugs, vitamins, steroids and alkaloids.

From **Jim Gilman** comes the following: "This is the first time I've written to the Class News since graduation almost 25 years ago. So much has happened in the interim that the size of the task of covering 25 years of personal history has discouraged me from the effort. But enough of preliminaries. Since leaving the Institute I've spent varying periods with Naugatuck Chemical, T.V.A., U.S. Army, Dennison Manufacturing Company, and Bay State Abrasive Products Company. The last named has been my home for the past 12½ years. My present position is manager of Engineering Services. I've been happy to stay in the field of technical administration and have had many opportunities to address professional groups in all parts of the United States and Canada. I've also had many articles on quality control and statistical engineering published in various journals. Of all the publications I've had, none has given me greater satisfaction than an unexpected one which I learned about last year. My senior thesis on corrosion was presented at an International Symposium on Passivity in Dresden, East Germany in December, 1963. It has also been published in American and German magazines.

"Now for my family history. Evelyn Taylor and I were married in June, 1941. We have two children—Cherie, 20, a junior at University of Massachusetts, and George, 18, a senior at Wilbraham Academy. On January 31, Cherie was married. Gosh, it seems only yesterday that I was getting married. Time sure flies, doesn't it? I have been looking forward to our 25th Class Reunion. I have not seen many of the fellows since the cocktail party at **Russ Haden's** on our 20th Reunion. But as of this moment I'm afraid I will be in Europe during Reunion Week. So this letter may be my only opportunity to say to all my old friends of the Class of '40, 'Hello'. Give my best to all the gang. I enjoy following their progress as reported in your monthly column. Too bad that more of us don't take time to keep in touch."

I am indebted to Carole Clarke, Secretary of the Class of '21, for the following item. Under **Divo Tonti's** direction, the New Jersey Highway Authority is building a $1,600,000 amphitheater and cultural center in the Garden State Parkway's Telegraph Hill Park. Architect for the amphitheater is Edward Durell Stone '27. . . . From **Ed Hooper,** who now resides in Chevy Chase (a Washington, D.C. suburb) comes the following note: "As you probably know the other three of the 'Four Horsemen' who took the course with me, are also in town. Admiral Horatio Rivero, Vice Admiral A. G. Ward and Vice Admiral Floyd Mustin. Good luck with your Handbook!"

Our Class is honored by the selection of **Ieoh Ming Pei** as architect for the John F. Kennedy Memorial Library at Harvard. As Ieoh stated at the time of his selection, "It has been said so many times now that President Kennedy had a special meaning for younger people. But it is so true. I know that all my generation shared a very strong identification with President Kennedy—and, of course, I am no exception." . . . **W. H. Krome George** has been elevated to vice-president in charge of Economic Analysis and Planning of Alcoa, while **Dave Heskett** has been elected president and first executive officer of Montana-Dakota Utilities Company. . . . Alan Voorhees, '49, is vice-president of the new Canadian firm of Read, Voorhees and Associates, Ltd. The new firm will act as consultants in the field of transportation and social and community planning. . . . **Leonard Weaver** was the director of the Neponset Choral Society's presentation of Elijah on December 6, 1964. Leonard has been director of the Choral Society since its founding. . . . As a final note, remember, "Life Begins With '40." See you at the Reunion—**Alvin Guttag,** Secretary, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C.; **Samuel A. Goldblith,** Assistant Secretary, Department of Food Technology, M.I.T., Cambridge, Mass.

'41

Joseph G. Gavin, Jr. is the man at the helm of the LEM (lunar excursion module) project at the Grumman Aircraft and Engineering Corporation in Bethpage, L.I. The design for the 15-ton vehicle that is to put astronauts on the moon was recently exhibited by Grumman. The exhibit was a wooden and metal mockup of the 20-foot-high vehicle which has been dubbed the "bug" because of its appearance. Grumman will build nine of these vehicles for ground testing and 11 for flight under a $390 million space agency contract. Joe carries the title of vice-president, and director of the LEM program. During the war he served in the Naval Reserve as an engineering officer with the Bureau of Naval Aeronautics in Washington. He was separated with the rank of Lieutenant Senior Grade. He is married to the former Dorothy Dunklee, of Brattleboro, Vt. The couple have three children, Joseph, 3d, 19, a student at Harvard; a daughter, Tay, 16, and Donald, 14. During his 18 years with Grumman, he has been an aircraft design engineer, chief project engineer, and chief missile and space engineer. He is president of the Harborfields Board of Education, Huntington, N.Y., a member of the Educational Council, M.I.T., and the American Institute of Aeronautics and Astronautics. . . . **Howard J. Samuels** was chairman of a dinner sponsored by the National Association for the Prevention of Addiction to Narcotics at which Mayor Robert F. Wagner of New York City was guest of honor. . . . **Arthur G. Walsh** formerly of Essex Falls, N.J., has been elected a director and vice-president of the Chemical Machinery Division of Baker Perkins, Inc., of Saginaw, Mich. Before joining Baker Perkins Inc., he was president of Essex Intercore Inc., a jointly owned overseas chemical and mining company of Essex Chemical Corporation, New Jersey, and Occidental Petroleum Corporation, Los Angeles. He also had served as vice-president in charge of operations and engineering of Essex Chemical Corporation. He now resides in Saginaw with his wife and two daughters, Jane, 17, and Amy, 16.

Albert Hosmer Bowker was recently inaugurated as chancellor of the City University of New York in the Great Hall of City College, a senior college of the University. He was elected last year as chancellor of the City University and was formerly dean of the graduate division of Stanford University from 1958 to 1963 and a professor of mathematics and statistics there for the previous 10 years. He is president of the American Statistical Association. He and his wife, the former Rosedith Sitgreaves of Easton, Pa., live at 128 E. 95th Street, New York City. . . . **Franklyn W. Phillips,** Director of the North Eastern Office, National

Aeronautics and Space Administration, has been busy recently with speaking engagements including the third annual banquet of the Joint Civic Agencies of Greater Springfield, Massachusetts, and a dinner meeting of the Boston Chapter of the Administrative Management Society at the Hampshire House in Boston. His topic in both instances was "NASA and Its Importance to New England." He is a member of the American Institute of Aeronautics and Astronautics and has been a lay reader in the Episcopal Church as well as actively engaged in the Boy Scouts of America. He lives in Wellesley.

Robert Fano, of Project MAC at M.I.T., in a recent interview, made the comment that "there are only two operating on-line time-sharing systems in the world." . . . **Frank S. Wyle,** President of the Wyle Laboratories, El Segundo, Calif., has just added a half-million dollar computer to his research facilities at Huntsville, Ala., which was demonstrated at an open house in January.—**Walter J. Kreske,** Secretary, 53 State Street, Boston, Mass.; **Henry Avery,** Assistant Secretary, 169 Mohawk Drive, Pittsburgh, Pa.; **Everett R. Ackerson,** Assistant Secretary, 16 Vernon Street, South Braintree, Mass.

'42

By chance I ran across **John Whitman** in the Co-op. John has returned to this area after a stay of five years, if memory serves me correctly, at the Department of Defense in Washington, D.C. He is back at Raytheon and in the process of getting his bearings back in his old stomping grounds. . . . Dick Feingold, '43, sent me a clipping from The Hartford Times about **Al Clear.** Effective March 1, Al will be general manager of Stanley Hardware, division of the Stanley Works, New Britain. For ten years he was employed by the John B. Stetson Company in Philadelphia, where he was company vice-president and division general manager. In 1958 he joined Booz, Allen and Hamilton, specializing in general management problems. For several years he has been involved primarily in areas of long range planning and acquisitions. I am particularly pleased to report this information about Al, as not only was he a classmate whom most of us remember well, but he also graduated from the Harvard Business School, where I am now employed. . . . I have had some very nice letters from **Curt Buford,** about whom I wrote in an earlier column. It certainly would be helpful if some of you were to drop me a note, as this month particularly I seem to have very little news. . . . About the only other item of interest concerns **Pauline Morrow Austin,** who received her Ph.D. at the Institute and has been given an honorary Doctor of Science by Wilson College. She is now directing a team of four graduate research assistants, two radar engineers, and two electronic technicians in the application of radar to meteorological problems, to further the knowledge of the behavior of storms and rates of rainfall. She is research associate in meteorology at the Weather Radar Research Project conducted by the Department of Meteorology at M.I.T.—**John W. Sheetz,** Secretary, Harvard Business School, Soldiers Field, Boston, Mass. 02163.

'43

John Alschuler spoke on the "new Illinois school building code" at a meeting last November of the Western Communities Architects Association, which is located in the Chicago area. He was chairman of the code drafting committee which completed its work last year. John maintains a private architectural practice in a variety of fields including medical centers, hospitals, apartments and housing for the aged. . . . **William R. Thurston** was the speaker at the Worcester County Section of the Institute of Electrical and Electronics Engineers on the subject of "Coaxial Cable Measurements." Bill has been General Radio Company's marketing research manager for several years specializing in test equipment. . . . Mrs. **Margaret M. Blizard,** who received her master's degree in public health with our class, announced her candidacy for the Massachusetts Democratic State Committee in the second Norfolk district. She received her law degree at Suffolk University, is a member of the Norwood Democratic Town Committee and is a past president of the Democratic Women on Wheels. . . . **James P. Craft, Jr.,** a retired Navy captain, who received his master's degree with our class, was appointed dean of men at the University of Pennsylvania last November. He is a much decorated veteran of World War II who retired last year as Chief of Staff of the Fourth Naval District headquarters in Philadelphia.—**Richard M. Feingold,** Secretary, 266 Pearl Street, Hartford, Conn. 06103.

'45

Let's get that reservation in—sunny Cape Cod and the friendly surroundings of the Wychmere Harbor Club are only eight to nine weeks away. Reunion Treasurer **Bill Meade** reports that additional reservations have been made by Edna and J. J. Strnad, Chuck and Marilyn Buik, Jerry and Mary Quinnan, Jerry and Lib Patterson, Pete and Lou Hickey and Dick and Barbara Luce. . . . In addition, I received a questionnaire and registration fee from **Jake Freiberger** today indicating that he and Kate would be on from Dallas. Last week Al Bowen, '48, indicated that he and his charming Billie would join the merry throng. Although registration fees have not as yet been received, Jim and Ellen Brayton, Hart and Blanche Kircher, Tom and Jimmie Stephenson and Al Oxenham expect to be in attendance. . . . As of February 12, we had received 76 acknowledgments to our first mailing broken down as follows: Registration fees paid, 26; planning to attend 16; currently expected, including wives 80; undecided or not indicated 11; not planning to attend, 23. . . . If you have sent in your registration or have indicated that you hope to attend and have not seen your name in print don't be alarmed! There is a minimum lag of between 6 to 8 weeks from that time you write and that time these notes would reach your eyes. During the next several weeks many of you in the large metropolitan areas will be approached by phone with the thought that you may have overlooked your festive 20th. Lets all meet on the Cape in early June—the more the merrier!

Ernest T. Larson who received his master's with us in 1945 has been appointed manager of X-ray products and applied physics research and development at General Analine and Film Corporation. . . . Recent address changes have **Pete Agoston** out of Charles Pfizer, New London, to New York City and Scarsdale; **Wilbur Hamon** from the University of Mississippi to Agriculture Research Service in Boise, Idaho; Lt. Cdr. **Sam Moore** U.S.C.G., C.O. of the cutter Redwood operating out of New London, Conn.; **Dick Winkler** from Baltimore to Berwyn, Pa., and **Larry Van Ingen** to Glen Head, Long Island. . . . See you all at the Wychmere Harbor Club.—**C. H. Springer,** Secretary, c/o Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York, N.Y. 10017.

'46

Stanley Ruttenberg, Executive Secretary of the United States Committee for the International Year of the Quiet Sun (sounds Oriental!), disclosed the existence of a new cloud-forming compound in Space Log, a quarterly publication of Thompson Ramo Wooldridge's Space Technology Laboratories. This new compound, trimethyl aluminum, will be used to form clouds which will glow throughout the night, permitting longer term study of wind currents near the boundary of the upper atmosphere. Up to now, fluorescent clouds have only been possible during the hours of dawn and dusk. Stan reports that the clouds will permit study of the effects of solar radiation in the "Igno-sphere," that region of relatively unexplored space above balloon height, roughly 60 miles, and below satellite height, roughly 120 miles. . . . **Archie A. Stone,** a graduate student of our class, and Chief Design Engineer of the International Engineering Company, Inc., was recently elected vice-president of the firm of consulting engineers. Archie's primary field is hydro-electric engineering, and after a brief stint with the Bureau of Reclamation he joined International in 1947. He has been involved in, and responsible for, the design of dams and powerhouses in India, Ceylon, Brazil, Turkey, and California to name but a few. When he is not travelling all over the world, Archie hangs his hat in

Palo Alto, Calif. . . . We received a nice letter from **Bill Schield** reporting his election as partner of Robert W. Baird and Company, the Milwaukee, Wis., based New York Stock Exchange firm with which he has been associated for the last six years. If his plans haven't changed the Schields will be in Japan next month revisiting friends they made there when he was stationed in Japan in 1953. Bill was in touch with **Bob Spoerl** recently and reports that all is well in the Spoerl family.

To close out the minutes of this meeting we have a few new addresses to report: **Jonathan Ingersoll,** 501 Laurel Street, San Carlos, Calif.; **Richard Y. S. Jui,** 174 Soiswasdi, Bangkapi, Bangkok, Thailand; **Stuart D. Grandfield,** 550 Barker Pass Road, Santa Barbara, Calif.; **Beverly (Beane) Graham,** Shaw Island, Wash. 98286; **Jerome E. Fischler,** Apartment A-1007, Barrington Plaza, Los Angeles, Calif.; **James V. Chabot,** 8 Pilgrim Circle, Wellesley, Mass. (Jim, what brings you back to New England?); **Edward J. Bacon,** 9808 Watts Branch Drive, Rockville, Md.; and last, but not least, **Alexander W. McEwan,** RD#1, Annandale, N.J. (Mack, how about a letter?). That winds it up for the month, except for one last comment—to those who have delayed calculation of their 1964 federal income tax we extend our sympathy to you in your soon to be experienced illness. Write, and tell us all of your troubles.—**John A. Maynard,** Secretary, 25 Pheasant Lane, North Oaks, St. Paul, Minn. 55110.

'48

Ralph Wentworth was technical program chairman for the annual meeting of the American Institute of Chemical Engineers. Ralph is manager, Chemical Engineering, for Dynatech Corporation and is a former chairman of the Boston section of the American Institute of Chemical Engineers. . . . Mrs. **Barbara R. Perles** has joined the full time faculty of Bentley College of Accounting and Finance, Boston, as an instructor of mathematics. During World War II she worked at M.I.T. as a research chemist studying the properties of penicillin and later received her M.S. on a full scholarship basis. Mrs. Perles and her husband, Benjamin M. Perles, head of the Economics Department at Bentley College, are parents of three children. . . . **Bernard M. Gordon** was principal lecturer of the 1964 Fall Lecture Series of the Boston section of the I.E.E.E., on the subject, "A Critique on Integrated Circuits to Date and a Look to the Future." He founded Epsco Inc., in 1955 and was president and technical director of that company until he formed Gordon Engineering in 1962. . . . Margaret Anne Eikrem, of Mattapan, a member of the present freshman class, is the daughter of **Lynwood O. Eikrem.** Somehow this sort of thing doesn't help one feel a bit younger. . . . **Victor L. Ransom** is listed in the October, 1964, Bell Laboratories Record as an author of an article on a traffic data processing system. He has been with Bell Laboratories since 1953 and has been concerned both with the design and manufacture of data processing equipment. He has also taught circuit theory at Bell and at the Newark College of Engineering. . . . **Arthur S. Davis** has joined Latrobe Steel Company as assistant to the vice-president of sales. "Art" has been a management consultant for the past several years and has specialized in assisting industrial firms on programs of product diversification. In his new position, he will perform staff services supporting the company's marketing activities and will coordinate advertising and communications involved in product promotion.

John F. Brady, Director of Applied Science, U.S. Naval Underwater Ordnance Station, has been credited with the development of a high power liquid propellant engine for torpedoes. It is extremely complex and compact and has met, as the Navy puts it, "with distinct success". . . . **John C. Avallone** has been named general manager of the Lighting Equipment Operation, Sylvania Electric Products, Inc. John joined Sylvania as a microwave engineer in 1952 and has held various management positions in the Special Products Operation, becoming a plant manager in 1959. He will now be responsible for the manufacture and sale of Sylvania's complete fluorescent fixture and outdoor lighting lines. He will make his headquarters in the Salem area. . . . **Clarence W. Schultz** is serving a one-year teaching assignment at the University of Alexandria, Egypt, on a Fulbright Exchange Professorship. . . . **Lyndon Welch** has been elected president of Eberle M. Smith Associates, Inc., of Detroit, Mich. He was formerly an instructor in the school of architecture and design at the University of Michigan and has maintained his residence at Ann Arbor. . . . **David E. Higginbotham** has been promoted to the rank of full professor of electrical engineering at Tufts. . . . **Peter Thornton** has been appointed general marketing manager of U.S. Envelope. The Thorntons live at 575 Ridge Road, Wilbraham, Mass. . . . We have a note that Mr. and Mrs. **Francis X. Crowley** and their three children have moved to 33 Hickory Road, Wellesley. Francis is with the Nat Gun Company of Boston. . . . **Stuart W. Thayer,** Supervisor of the new construction division of Lykes Brothers Steamship Company, Inc., has been appointed to the Educational Council of M.I.T.

J. W. Hawkins has been named assistant to the vice-president and general manager of marketing of Sunray DX Oil Company. . . . **W. D. Kingery** is listed in Ceramic Age as chairman of the Materials Advisory Board Ad Hoc Committee on Processing of Ceramic Materials. . . . **Philip J. Friedlander** is assistant vice-president of manufacturing of Rob Roy Company, Inc., and is presently assisting in establishing a new Rob Roy plant at Lewsburg, Tenn., where he resides with his wife Ellen and five children. . . . **Edward A. Mason** is one of 97 recipients of Senior Postdoctoral Fellowships awarded by the National Science Foundation. He will study at EURATOM, the Italian Center of European Atomic Energy Community. . . . **Erik L. Mollo-Christensen** of the Department of Meteorology and **T. Y. Toong** of the Department of Mechanical Engineering of M.I.T., were session chairmen at the recent Aerospace Sciences Meeting in New York. . . . We have a note from **Norman Shillman,** 3106 Lightfoot Drive, Baltimore, Md., who states that he is currently a vice-president of A. and H. Shillman Company, a family operated mail order enterprise.—**R. V. Baum,** Assistant Secretary, 1718 E. Rancho Drive, Phoenix, Ariz.; **Robert R. Mott,** Secretary, Kent School, Kent 57, Conn.; **John T. Reid,** Assistant Secretary, 80 Renshaw Avenue, E. Orange, N. J.

'49

Thanks to a nice letter from Percy W. Witherell, Secretary of the Class of 1899, I can pass along the information that **Richard H. Witherell** became chief purchasing agent of the electronics division of the Foxboro Company in January of this year. . . . **George Piness** represented M.I.T. at the inauguration of Mark H. Curtis as president of Scripps College in Claremont, Calif., on February 25. George is assistant director of manufacturing for the Wayne Manufacturer Company in Pomona, Calif. He is also an Educational Counselor for the Institute in the Los Angeles area. . . . The press clipping service, which got a bouquet from me last month for its thorough coverage, gets some sort of award for lateness this time because this month's sheaf contains an item from the May 7, 1964, issue of the Watertown, (Mass.) Sun reporting on a speech given by **Milt Bevington** on the subject of "America's Lost Children." Milt is a trustee of the Children's Medical Research Center and has devoted much time to the problems of emotionally disturbed children. So even though the clipping was late, the subject was worth-while and its nice to hear from Milt. . . . **John Marvin** is going great guns as president of Saltesea Packing Company with headquarters in Providence, R.I., and two additional plants in New Jersey. Saltesea is the largest company in the country dredging fresh clams from the deep sea and processing exclusively clams and clam products including chowder bases for the fresh, fresh-frozen, and canned markets.

William L. "Jack" Jackman was drowned September 27, 1964, in a sailing accident on Lake Quannapowitt in Wakefield, Mass. The accident happened at dusk when a sudden gust of wind capsized the boat and dumped Jack and his son Eddie, aged 13, into the water in the middle of the lake. They clung to the boat for a while but no one on heavily travelled Route 128 nearby saw their plight. So they decided to swim for shore before total darkness arrived. Jack didn't make it. At the time of his death, he was employed

by the Mitre Corporation in Burlington, Mass. Prior to that he was with Minneapolis-Honeywell having left Itek in 1961 where he was executive electronic engineer. Jack loved working with kids and managed a little league team in his neighborhood of Lexington, Mass. He was also very active in the Boy Scouts. His survivors, to whom the class extends its deepest sympathy, include his wife, Lillian McAlister Jackman, and six children: Robert, 14, Edward, 13, William, 12, Kathy, 8½, James, 4, and Richard born November 17, 1964.—**Fletcher Eaton,** Secretary, 42 Perry Drive, Needham, Mass. 02192.

'50

The 15th Reunion of the Class of '50 should prove to be a very interesting one. In this computer age we will have a chance to criticize, and assess changes taking place in corporate developments, management techniques, marketing strategy, finances, and technologies. Also, the crises dogging our major centers of learning, integration, religious differences will undoubtedly get some attention. Of course, we shall not get together and make a debating conference out of these pressing problems. Our purpose is to reacquaint ourselves and to have our families, with the spirit of M.I.T., spend a day together with one goal in mind—to make a happy affair out of our class reunion. Let us all be there in June at Cape Cod. . . . **Jim Daley** has been appointed to the Chatham, N.J., Board of Education. Jim is an executive with the Prudential Insurance Company in Newark. Jim's address is 180 Noe Avenue, Chatham, N.J. . . . **John Esserian** has been appointed manager of personnel and industrial relations for the physics research division of Geophysics Corporation of America. He had been serving since 1957 as industrial relations director for Epsco Inc., Cambridge. John and his wife Carol reside with their three children at 107 Burlington Street, Lexington. . . . **Bob Scifres,** formerly production manager of the National Gypsum Company, has been promoted to vice-president of manufacturing of the Huron Cement Company. Bob joined National Gypsum 22 years ago, and has been promoted through various positions including plant engineer and manager of several plants. For the past eight years, he has been production manager of the firm's east coast gypsum plants. Bob and his family reside in Alpena, Mich. . . . My best wishes.—**Gabriel N. Stilian,** Secretary, St. Clair and Welch, Inc., 10 East 40th Street, New York, N.Y. 10016.

'51

For those of you who wrote last month (and even those of you who didn't), **Thomas Turgeon** has been named chief engineer of the Quebec North Shore Paper Company's Paper Mill. Felicitations, Tom! . . . **Amar G. Bose** is an associate professor at M.I.T. and won the 1963-1964 M.I.T. Baker Memorial Award; this award is given annually to the outstanding undergraduate teacher. He recently spoke to the Boston Chapter I.E.E.E. group on electronic computers, about research that he has been conducting to differentiate between the effects of the normal-mode structure of a room and that of the loudspeaker. This is to help to understand and eliminate the degredation produced by a loudspeaker in a room (all you hi-fi fans pay attention!) . . . **David Caplan** is manager, data communications, systems engineering with R.C.A. Dave and Elinor live in Cherry Hill, N.J., with their four children: two girls, one boy, and one that arrived sometime between writing these notes and receiving an announcement. . . . **John P. Dowds** seems to be one of those people whose energy our wives are always telling us we should have: he resigned as general manager and partner of Anabaco to open offices as an independent oil operator, consulting geologist and engineer. Last April he presented a paper, "Oil Finding: A Practical Problem in Statistical Decision Theory for Technician and Management," at the International Symposium on Statistics, Operations Research, and Computers in the Mineral Industries which was held at Colorado School of Mines. His spare time activities include being president of the M.I.T. Club of Oklahoma, vice-president of the Engineering Club of Oklahoma, and district representative of the American Association of Petroleum Geologists. . . . **Dave Findlay** is sales engineer for the Goodyear Chemical Division. He is living in Canton, Ohio, and has three children. . . . **Ed Finnegan** sent a note telling us that he has been selling concrete products for Master Builders for the past eight years. He is living in Fullerton, Pa.

Edwin Gabriel is an associate professor at the U.S. Naval Academy and was recently awarded patent number 3128944 for a Precision Triangle Solver and Computer. This item eliminates the need for trigonometric and multiplication tables for solving triangular problems, and can be used to solve these problems in seconds with slide rule accuracy. . . . Also in the academic field: **Joseph Gurland** has been promoted to full professor at Brown University. . . . **Solomon Levine** has been given tenure at the University of Illinois where he is professor of labor relations and director of Asian studies. Dr. Levine was a graduate student with our class and received his Ph.D. in 1951. . . . **Winston Markey** (our crack pistol-packing classmate) is an associate professor at the Institute in the Department of aeronautics and astronautics, and is the director of the M.I.T. Experimental Astronomy Laboratory. He has received the singular honor of being chosen by Chief of Staff General Curtis Le May to be the new chief scientist of the U.S. Air Force. In this capacity he will be responsible for providing technical and scientific advice to the chief of staff on plans, programs, and requirements. . . . Another of our professorial classmates who has been getting a lot of coverage is **Charles Miller,** head of Tech's Civil Engineering Department. The Boston Globe ran a feature article recently, and the financial pages copied excerpts of his suggestion to construct a tunnel between Boston and Washington, D.C., in which trains could run at speeds up to 300 miles per hour!

Robert Hunter has been promoted to assistant mill manager of the Peter J. Schweitzer Division of the Kimberly-Clark Corporation. He first came to Schweitzer in 1955 and has worked on special engineering projects as the chief of the special papers program at the Eagle Mill Division. . . . **John Lindholm, Jr.** has joined Battelle Memorial Institute to head up their packaging economics research programs. John had been product manager at Celanese Plastics and at Kordite Corporation prior to joining Battelle. After graduating from Tech John received an M.B.A. from the Harvard Business School. . . . **Robert MacCallum** dropped me a card to bring us up to date. Bob has been the marketing manager for foundry products with Union Carbide's Metals Division. He owns a Cessna 182 and both he and his wife, Sharon, have pilot's licenses and list a trip to the Bahamas as their longest jaunt. I'm surprised at the large number of our class who are flying and owning airplanes—I guess I really shouldn't be, it is the 20th century —but nevertheless, I'm impressed Bob, and thanks for writing. . . . Major **Cranston R. Rogers** has been appointed commanding officer of the 483rd Engineer Battalion in New Bedford. He is principal engineer and office manager of the firm of Charles A. Maguire and Associates, Inc., and is a member of the Hingham, Mass., planning board. . . . Marjorie Swift, '41, is continuing the operation of Swift Laboratories which was founded by her late husband, George P. Swift. . . . **Armand Tanguay** has sent in a very pleasant card: he reminded us that he was an ex-Westgate West tenant at Tech and called for news from others. He is now the manager, Information Systems, of Electro-Optical Systems, Inc., a subsidiary of Xerox. During the summer of 1963 he drove East with his family from Pasadena but didn't get a chance to get to Cambridge. It's too bad; he ought to see what is located at Westgate West now—brick high rise apartments for married students. They have three children, the oldest, a boy, is a sophomore in high school "doing excellent work" and is a ham operator. They also have a girl in the seventh grade and another son in the fifth grade. Armand, himself, has kept up with affairs and took the executive program course at U.C.L.A. in 1964. . . . **Albert Zesiger** has been named vice-president of the Commonwealth Group of Mutual Funds. Al moved out to San Francisco in September to take on the investment management of this group which represents over $300 million (that's $3 x 10^8!) and is one of the country's oldest funds. Al is also a director of the Charter Company and of the Draper Company. Not only does he find the job challenging, but he has found San Francisco to be almost as delightful as old New England. . . . And my final note is

a sad one. One of the less pleasant tasks is to have to report that classmates have died. **William Ahlborg** suffered a cerebral hemorrhage at his home, 29 Lantern Lane, Warwick, R. I., and died on December 4, 1964. Bill entered M.I.T. as a freshman from Classical High School, Providence, R.I., was a member of Lambda Chi Alpha, and graduated in course XVII (building and construction). He was president of O. Ahlborg and Sons, Inc., and was president of the Rhode Island Chapter, Associated General Contractors of America. He had received a U.S. Department of Labor certificate for his efforts in promoting apprentice training, particularly in bricklaying and carpentry. In addition to his parents and a sister, he left his wife, Marcia S. (Lindsay), and three children. Our sympathies go out to his family.—**Howard L. Levingston,** Secretary-Treasurer, 358 Emerson Road, Lexington, Mass. 02173; **Forest Monkman,** Assistant Secretary-Treasurer, 108 Park Avenue, Larchmont, N.Y.

'53

Spring is here and **Jay Berlove,** XV, is engaged. An April wedding is planned for Jay and Miss Carole Mouradian. Miss Mouradian studied political science at Western University, London, Ontario and is now a dental nurse in Toronto. Jay indicates that "everything comes to him who waits." From the photo of Carole, he is certainly correct—very pretty! Jay has been very active in local politics and was a delegate to the New York State Democratic convention, is a former treasurer of the Democratic County Committee, Niagara Falls, N.Y., and was on their Municipal Transportation Commission. All best wishes, Jay. For those who may wish to write—the address, 4828 University Court, Niagara Falls, N.Y. . . . **Marty Wohl,** XV, reports having met **Dick Chambers,** XVII, and his wife in Washington at the annual Highway Research Board meeting. Marty has recently received a 15-month faculty fellowship from the National Science Foundation. According to Marty "while the fellowship can be regarded as quite handsome, and almost lucrative, I should note that my playboy excursions will be somewhat limited by my "bag and baggage," so to speak (consisting of one wife and two male children)." This opportunity for a study program will permit Marty to update, complete his doctorate, and perhaps travel. At the moment, the educational orgy may occur at M.I.T., University of California, Harvard, or University of Pennsylvania. Congratulations, Marty! —**Norman R. Gardner,** Secretary, 100 Memorial Drive, Cambridge, Mass.

'54

On April 19, an Institute holiday as you will recall, numerous residents of Acton will walk to Concord along the Isaac Davis Trail. They will be honoring their fellow townsmen who, in 1776, marched to fight the British at the bridge. In particular they will honor Captain Davis who, with his men, was first to march down to the bridge and first to be killed. Your secretary will be there, and invites all of you to enjoy the walk with him and at the same time provide some news of yourself, family, and friends. If a six-mile hike at 7 A.M. doesn't appeal, some other method of communication will be accepted and appreciated. . . . Last May our President, **Chuck Masison,** became president of the Pond Plain P.T.A. in Westwood. . . . **Dick Rogers,** a sales engineer for the General Radio Company, is now assigned to the Florida office in Orlando. Prior to this Dick had worked for the same firm in Washington and West Concord. . . . Our news of graduates is equally sparse. . . . **Burton Bernstein** has joined the Airtron division of Litton Industries as manager of the crystal physics department in the solid materials laboratory. Prior to joining Airtron in Morris Plains, N.J., Burton was with the Republic Aviation Corporation. . . . **David A. Hill,** who was with M.I.T., has been named chief physicist for the Vitro Laboratories facility at West Orange, N.J. . . . **David Hobbs** has been named a vice-president, research and engineering, for Comtek in Woburn. He lives in Belmont with his wife Rose-Marie and one daughter. . . . **Frederick Saunders,** an associate professor in Meteorology at M.I.T., gave a paper, "A Survey of Frontal Zones in the Middle and Upper Troposphere," at the 236th meeting of the American Meteorological Society in New York in January of 1965.—**Bob Evans,** Secretary, 43 High Street, South Acton, Mass. 01771.

'55

It is with deep regret that we record the passing of two members of our class. **Peter C. Bulkley,** who graduated with us in Course XV, died on November 23, 1964. **Robert T. McWade, Jr.,** who received the S.M. degree in Course X, was killed in an auto crash on December 12, 1964. . . . A note was received from the Sperry Rand Corporation advising us that **Joseph A. Vacca** has been appointed applications engineer, specializing in the mobile vehicle field, for its Vickers Incorporated Division. Joe was most recently in the firm's New York aerospace office and will now be operating from Springfield, N. J. . . . A very newsy letter addressed to "Family and Friends" of the **John Lindenlaub** family was received in December. John and Debby are the proud parents of three boys and a girl. He has recently been elevated to the position of associate professor of electrical engineering at Purdue University and hopes to be able to attend the reunion in June. . . . **Chan Stevens** writes that he and Sally were expecting a girl in March. What with three boys around the house, Chan was wishing this next one into a certainty. He has been splitting his time between plants of the Stevens Manufacturing Company in Mansfield, Ohio and Renfrew, Ontario. . . . A nice card was received from **Emanuel Schnall** who has recently joined the ITEK Corporation in Lexington as a staff electrical engineer. He was previously with Laboratory for Electronics. . . . The Class Reunion committee has had a thunderous response to the questionnaire; as of the middle of February, a total of 145 replies were received, of which 43 indicated they were definitely coming and 68 indicated they were not sure. Counting wives, girl friends, et cetera, the committee is definitely expecting a turnout in excess of 150. The plans for the weekend are top-notch and we sincerely hope that all of you who are undecided at this point will make a special effort to attend.

LeGrand S. Allen, Jr. is a mechanical design engineer at R.C.A. in Camden, N. J. Aside from his professional duties, Lee is a 32nd degree Mason, a member of the Crescent Temple, and is heavily involved in sports car activities in the South Jersey Region. . . . **Brewster Ames, Jr.** is an electronic design section manager at the Raytheon Company in Norwood. He and Betty reside in Norwood, and between his busy work schedule, he was able to find time to obtain a master's degree in electrical engineering at Northeastern in June, 1961. . . . **Ed Ehrlich** is a technical services supervisor with Western Printing and Lithographing in Poughkeepsie, N. Y. He and Janet and the four children are living in Poughkeepsie where Ed finds additional time to teach Sunday School, be an M.I.T. educational counselor, and work on the Community Chest. . . . We wonder what kind of pep pills he recommends! . . . **Paul Goldan** attended the University of Heidelberg after graduation and then was at the University of Illinois where he received the M.S. in 1958 and the Ph.D. in 1963. Paul, Mary, and the three children, live in Boulder, Colo., where he is a physicist at the National Bureau of Standards. . . . On the questionnaire, **Larry Ingber** claims that his additional education since 1955 included four days in Las Vegas. Larry, Barbara, and the three children reside in Newton Centre, which also houses the center of operations of the L. K. Ingber Company, a manufacturer's representative organization in the electronics field.

A very interesting letter was received from **William H. Nichols,** S.J., who graduated with us in physics and later received his Ph.D. at Tech. Bill is now an assistant professor of physics at the University of Detroit and is very much interested in M.I.T. and in alumni activities. . . . After graduation, **John Rossettos** obtained his M.S. at M.I.T. in XVI and his Ph.D. at Harvard in applied mathematics in 1965. John and Joy reside in Newport News, Va., where he is an aerospace engineer at the NASA Langley Research Center. . . . **Walter Rubin** attended medical school after leaving M.I.T. and received his M.D. from Cornell University in 1959. Walt, Naomi, and the three children live in New York City, where he is an instructor in medicine at the Cornell University Medical

College. . . . **Roy Salzman** is a senior analyst with Adams Associates in Bedford, Mass. Roy, Doris and the two children live in Carlisle, where they operate, "etc," a country store. Roy also finds time for skiing, choral singing, and work on nine acres of land in preparation for building a house. Roy and Ed Ehrlich must use the same brand of pep pills!—Co-secretaries: Mrs. **J. H. Venarde (Dell Lanier),** 2401 Brae Road, Wilmington, Del. 19803; **L. Dennis Shapiro,** Aerospace Research, Inc., 130 Lincoln Street, Boston, Mass. 02135.

'56

Meyer Barash was the co-author of an article entittled "Repeater Fault Locating Test Set for S.D. Submarine Cable Systems," in the December, 1964, Bell Labs Record. . . . In a recent note from **Phil Bryden,** he passes along the following information: he is now associate professor of psychology at the University of Waterloo, Ontario; his scientific publications are increasing and he and Pat expect their first child this month. . . . **John** and Winnie **Coleman** sent an interesting Christmas letter from the Pacific Northwest. John is back to school taking night courses in the winter, and the whole family heads outdoors to the mountains in the summer. . . . Among the Christmas greetings received was an original design card from **Tom Doherty.** . . . Captain **John Frishett** was decorated with the Air Force Commendation Medal. John is now a propulsion engineer at Space Systems Division Headquarters in Los Angeles but was formerly assigned to the Missile Development Center at Holloman A.F.B., N.M. . . . **Bernie Haas** had been a sales engineer for Oronite Chemical for most of his career since leaving Tech. However, last September, Bernie took a leave of absence to attend the Stanford Graduate School for Business. . . . In January, **Dick** and **Virginia Johnson** announced the birth of their daughter, Barbara Ann. . . . **David Kaufman** and Harriet Samuel were married last Thanksgiving in Jamaica, N.Y. . . . **Bill Leitch** has been named industrial production editor of Business Week magazine of the McGraw-Hill Group. . . . **Elwood Wood** has been named assistant plant manager of the Owensboro, Ky., plant of Dewey and Almy Chemical Division of W. R. Grace. In addition to his S.B. and S.M. from Tech, Elwood also received an M.B.A. from the University of Pennsylvania. I was somewhat surprised to find that 10 members of our class hold positions in the local Alumni Clubs but only six are active as local representatives of the Educational Council.—**Bruce Bredehoft,** Secretary, 16 Millbrook Road, Westwood, Mass.

'57

Fred Morefield called this evening, asking me to put together a Class News column. To begin with, **Dave Wolsk** is a vice-president of and principal in Connecticut Valley Chemicals, Inc., which manufactures and markets a unique soldering flux. Last year, Dave represented the United States at an international convention on soldering. During his leisure hours Dave maintains a dangerous bachelor pad in Greenwich Village. . . . **Philip Pearle** earned his Ph.D. in physics at M.I.T. and is now an instructor at Harvard. The Pearles, married five years, have a two-year old daughter, Laura. Phil says that **Joe Rosenshein,** who also obtained his Ph.D. in physics at Tech, is now on a Fulbright in Italy. . . . **Loring Andrews** has been with Sperry Gyroscope on Long Island since 1959 and is currently working on antenna engineering. Loring and Margaret have one son, Neal, two and one-half. . . . Replanning Suffolk County is **Les Thomas,** now a licensed architect with his own practice. Les and Barbara have a daughter Christine, age 16 months. . . . **Homer Bosserman** is at Berkeley working on a Ph.D. in physics. . . . **Bob** and Betty **Berg's** daughter Karen is approaching her first birthday. Bob has been with U.S. Rubber Company's international chemicals division in commercial development for the last four years. . . . **Ed** and Toni (Deutsch, '58) **Schuman** were in New York recently from the West Coast. Ed has been with Litton Industries since graduating from the Harvard Business School and is responsible for controlling costs in their various government programs. Toni combines the joys of a hausfrau with serving three days a week as consultant to a company on the installation and operation of E.D.P. systems. My date book says that Ed and Toni's daughter Jennifer should be almost three, and weigh more than the eight pounds, four and one-half ounces she did on June 15, 1962, and that Eric, their son, should be one year old this April 20 and weigh better than eight pounds, one ounce.

Upon graduating from Harvard Business School, **Ira Zames** joined Pilot Radio as assistant to the president. Ira has been with American Can Company for a year now in its corporate acquisitions and merger department. . . . And where is **Jay Hammerness** these days? Why, he is back at Tech in the Dean of Students Office! . . . M.I.T.'s Assistant Professor **Ed Roberts** was in Japan recently, lecturing on latest management techniques. . . . **Jules** and Elaine **Byron,** their son, Scott, and his baby sister are building a home in Great Neck. Jules' real estate business continues to flourish. . . . Recently, while in New Orleans, I checked in at every M.I.T. man's first choice: the Royal Orleans. Asking for the assistant general manager I learned that Mr. **Dischel (Gary)** is now in Boston, managing the Hotel Kenmore. . . . As for this writer, **Alan May,** perseverance pays off as I've been working at Bankers Trust Company ever since graduation, and last January was promoted from assistant treasurer to assistant vice-president. For crying out loud, please write Morefield and tell him what you're doing to get him off my back. I will thank you. Fred will thank you and all your classmates will loudly say: Thanks! Alan M. May—**Frederick L. Morefield,** Secretary, 1A Acorn Street, Boston, Mass.

'58

The Air Force announced that Captain **Walt Ackerlund** has completed the training course for F-100 super sabre pilots at Luke A.F.B. in Arizona. Walt is being assigned to a unit of the U.S. Air Force in Europe stationed at Lakenheath R.A.F. Station in England. . . . **Paul Rothschild** is now a group leader at Owens-Illinois in Toledo. Paul and Rona now have two boys, Stephen and two-month-old James. Paul is scheduled to be in Boston at a meeting of the Society of Plastics Engineers to present a paper on the "Application of Rheological Fundamentals to Blow Molding Problems." . . . While scouting the wilds of Michigan for news of classmates, I found **Harold Graboske** in nearby Ann Arbor. He has been working with Bendix Systems Division here and also working for his Ph.D. in the department of astrophysics at the University of Michigan. Harold is now working part-time at Bendix in an effort to wind up his thesis by late this year. His wife Carol is busy teaching school in the area. . . . Talked with **Ken Whipple** who is progressing well at Ford and otherwise —they have four little Whipples. Ken is now supervisor of the programming and schedules group in the Ford Corporate Finance Staff in Detroit. He is enthusiastic about his work and reports: "You can't beat the automobile business."—**Michael E. Brose,** Secretary, 205 Pine Street, Tecumseh, Mich.; **Antonia D. Schuman,** Western Associate, 22400 Napa Street, Canoga Park, Calif.; **Kenneth Auer,** Midwestern Associate, 23105 Stoneybrook Drive, No. Olmsted, Ohio.

'59

For once, group, your old class secretary is happy with the job. After months of complaining about my empty mailbox, I've received an avalanche of correspondence (relatively speaking, of course). Howard Kaepplein writes from merrie England; Chuck Staples, from Pittsburgh; Chris Schlemmer, from Philadelphia; and Bob Muh tosses in a dig from New York.

Howard Kaepplein with his wife, Gail, and four-year-old son, Mark, have been living in London since last summer—and have been having quite a time of it. Howard is international marketing manager of Silicon Transistor Corporation, and is serving a two-year hitch in England to "organize and firmly establish sales of our products in all the European countries." In the course of his job, he and his family have been to Sweden, Denmark, Holland, Belgium, France, Switzerland, Germany, Italy, and Austria. When his residence is over in 1966, they plan to return to New York via Israel,

India, Japan, and Australia to "explore sales possibilities in those countries." . . . Meanwhile, back in this country (but not without having travelled) **Chuck Staples** writes: "We have just moved to Pittsburgh where I've joined U.S. Steel in their Commercial (Marketing) Research Division. Actually, it was this summer that we moved and therein lies the reason I didn't make it up for the reunion. I left Martin Orlando at the end of June (one year after **Dick Sampson** left) whereupon we stowed Richie, two-and-one-half, and Nancy, one-and-one-half, with Kadie's mother and left for Europe for one month. We drove around Spain and Switzerland mostly with two weeks of climbing in the Alps—Kadie and I climaxed the climbing by groping up the Matterhorn in three hours from the main hut. It really wasn't bad, but then we had perfect weather. Life is a bit calmer, but this city is a pretty nice place to live." Chuck adds that **Don Tyra** left Martin shortly after he did to go into business for himself, consulting in computer technology. It looks like the Sigma Nu '59ers had a real going alumni group there! Chuck heard recently from **Walt Humann** who is working for L.T.V. in Dallas and going after a law degree. He and his wife, Bea, have a three-year old, Walter.

Chris Schlemmer writes: "Since the reunion, I was appointed a management engineer at Atlantic Refining Company here in Philadelphia, and this fall an instructor at Drexel Institute of Technology evening college. During 1964, the Delaware Valley M.I.T. club elected me to their Executive Committee. The above keeps me pretty busy. I sure want to thank the fellows for the wonderful reunion on the Cape." . . . And finally, from my old buddy, **Bob Muh,** comes: "Hope you're enjoying the monthly ritual. Only four-and-one-half years to go." Bob will be around New York for awhile —he's presently working as a research assistant to Enile Benoit (Europe at Sixes and Sevens) at Columbia. . . . It was great hearing from the four of you; that only leaves 900-plus to go. I'm going to have to pull a quick-reverse now, though, and ask you not to all write at once. It seems that I was a little too gung-ho in the class notes for the February issue, and produced six inches more than the column could handle. That portion follows, and concludes this reporting until we again gather around the fireside. . . . **Robert Jenkins** is a United States Public Health Service fellow at the University of Chicago. He is in his third year as a grad student in clinical psychology, has started a practice in psychotherapy, and has begun to see patients on a professional basis. In addition to his doctoral studies, he is also working toward an S.M. in statistics. . . . **Elaine Beane Langford** is editing at M.I.T.'s Publication Office. In answer to the Course XXI questionnaire, she wrote "Sometime during the next 10 years my husband (**George,** also '59) will get his doctorate in metallurgy, and I don't know what we'll do then, but for the time being I seem permanently attached to the Institute." Don't feel alone in your cynicism, Elaine; my wife feels the same about my studies. . . . **John Huff** is a mathematician with the Air Force at Tinker A.F.B., and is studying for a M.B.A. at Oklahoma City University. . . . **John McElroy** has been named a Baker Scholar at Harvard Business School and was chosen from the first two-and-a-half per cent of the first-year class. . . . **Robert Melson** is working on an M.I.T. doctorate in political science. He received a Carnegie Foundation grant for study of the interaction between government and labor in Nigeria, and is now at the University of Ibadan. . . . **James Turner** has been named an Assistant Professor of Physics at Bowdoin College, and is developing and teaching an experimental course in modern electronics with emphasis on semi-conductors and solid state physics.

Well, that's all for now. I've exhausted my back-up supply of news clippings, so expect a few lean months if I don't receive some correspondence. This is sort of like the pot calling the kettle black, I fear, because I was just as negligent about writing when **Bob Muh** was screaming the same thing during his hitch as Secretary. Don't take that as an excuse, though; let us know what you've been up to.—**Glenn W. Zeiders, Jr.,** Secretary, 3 Rose Avenue, Watertown, Mass.; **Wayne L. Worrell,** Assistant Secretary, Hearst Mining Building, Lawrence Radiation Laboratory, Berkeley, Calif.

'60

Reunion time draws near. Don't forget the dates, June 12 and 13, Wentworth-by-the-Sea, Portsmouth, N.H. If you need more information, please drop a line to **Ray Harlan,** 118 Decatur Avenue, Arlington, Mass. We are looking forward to a good turnout so be sure to join us. . . . **Ray Ambrogi** has been appointed manager of forming research of the Technical Staff Division of Corning Glass. . . . **Ralph Larson** recently won the 1964 prize paper contest of Hydraulics and Pneumatics magazine. Ralph has been working on pneumatic control systems for Bendix Research Laboratories since 1960. He is living in Madison Heights, a suburb of Detroit. . . . **John Ashmall** was married last December to Miss Cynthia Belyea. John spent three years as a naval architect at Fore River Shipyards in Quincy, Mass. He is now attending Gordon Theological Seminary and is in the 1965 graduation class. John and his wife are living at 21 Asbury Ave., South Hamilton, Mass. . . . **Bernd Kahn** has been appointed chief of Radiological Health Research Activities at the U.S. Public Health Service's Robert A. Taft Sanitary Engineering Center, Cincinnati. The Khans live in Hyde Park, a suburb of Cincinnati. . . . **Richard Drury** graduated in January from the U.S. Armed Forces Staff College at Norfolk, Va. Dick, who is now a major in the Air Force, has been re-assigned to Maxwell A.F.B., Ala.—**John B. Stevenson,** Secretary, Partridgeville Road, Athol, Mass.

'61

Al Brennecke earns the title of Honorary Assistant Secretary of the month by filing a report on three or more classmates. Following are the essential items on '61 graduates from a Sigma Chi newsletter which he got together at Christmas: After departing the hallowed halls in June, 1961, Al himself went to work for the summer for Procter and Gamble in Cincinnati. In August he set sail for Germany where he studied at the Technische Hochschule Darmstadt for a year. During vacations he "managed to cram in trips to Italy, France, Belgium, and Scandinavia." In September, 1962, Al started in at the Harvard Business School; he got his M.B.A. two years later, spending the intervening summer in Cambridge working for IBM. Since June, 1964, he's been working for Industrial Nucleonics in Columbus as International Operations Planner. During July, Al married the former Kiki Tulloch. . . . After graduation **Dick Brown** went to work for Pratt and Whitney in Hartford, Conn. His work with jet engines carried him several times up to Montreal. In July, 1964, he switched his talents to a responsible position in the M.I.T. Industrial Liaison Office. Before making the switcheroo, he married Bettsy Bolster with Al Brennecke officiating as best man (two weeks later he retaliated by presiding as best man at Al's wedding!). . . . **Gene Jacobi** left the Institute after his second year to attend school in New York (or was it New Jersey?). He married the girl whom he brought to several M.I.T. weekends. . . . Not to be rushed, Wild **Bill Kendall** stuck around Boston for a few years to make sure his thesis was done right and to decide in what direction he should cast his lot. In late 1963 he left for Colorado where he is currently diligently working toward his M.A. in economics at Colorado University. He should be finishing up this spring. . . . After finishing up at Technology, Winn Martin, '62, hustled off to Philadelphia where he enrolled at Wharton. In June, 1964, he trundled on down to Atlanta with his freshly minted M.B.A. in hand, where he is currently residing. . . . Eric Mudama, '63, finished up his B.S. at the 'Tute while working part time for General Radio. The old "nose to the grindstone" paid off as he was promoted to the position of field representative for the Rocky Mountain region. He can frequently be found in Denver or Boulder sipping a brew with Bill in one of the student speakeasys. . . . **Ken Nill** is still up in Boston fighting the Institute for possession of a doctorate. . . . After graduation **Hank Schleinitz** worked for the summer down in Texas. In September he departed for Cambridge, England, where he commenced work on his doctorate under a Fulbright scholarship. During Christmas vacation of 1961 he went over to Germany to go skiing, and he and Al toured around Bavaria and Austria. Sometime between September 28 and October 19, 1964, he married Sheila Scott, who worked in one of his labs. It

was a simple wedding with a reception for 40 afterward. They will live in a cottage five miles from Cambridge. Hank is now finishing up his thesis and hopes to return to the States in June to work for DuPont. . . . **Bruce Tarter** is now in his fourth year of graduate school, Physics Department, Cornell University. He spent two summers working at the Lawrence Laboratory near San Francisco. On June 6, 1964, he married Jill Cornell. Winn Martin was best man. Future plans are basically to finish the thesis, probably around February, 1966, and get out of Ithaca as fast as possible. Probable destination will be the West Coast, the Boston area, or possibly near Washington. . . . **Earl Van Horn** is working for his doctorate in electrical engineering at the Institute—and was at last word making good progress. He is engaged to Sandra Wallaesa. She is from Cherry Hill, N.J., and is studying for a master's in chemistry at the University of Massachusetts. . . . Many thanks to Al for this boost to the class notes! If any other groups are circulating newsletters, I would appreciate receiving a copy, with appropriate editing if desired. You too can be an Honorary Assistant Secretary!

Don Straffin writes, "Some big, some small events: we have a little girl, Donna Marie, eight months old; I made Lt.(JG) in December; and am soon to complete a six-month course of training at Bettis, a school run by Westinghouse in Pittsburgh." Thanks for the card, Don! I'm not sure what the "small" events are!—**Joseph Harrington 3rd,** Secretary, 22 Hidden Road, Andover, Mass. 01810; **Alan Brennecke,** Honorary Assistant Secretary, 810 Riverview Drive, Apt. C-38, Columbus, Ohio 43202.

'62

The grapevine has it that **Mike Kottler** was married last August to Linda Oliva in Santa Monica, Calif. Mike is attending graduate school at UCLA. . . . **Herschel Clopper** and his wife announce the birth of their daughter, Staci Rachel, last November. Herschel is working on his Ph.D. thesis at Rice University in Houston. . . . **Bojey Salmon,** class president, wrote from Ft. Leonard Wood where he is in charge of one of the three earth-moving sections on the post. After leaving M.I.T. he took the Engineer Course at Ft. Belvoir and spent three weeks at Parachute Training School at Ft. Benning, Ga. He has participated in army maneuvers in California and Arizona. He says that he is looking forward to entering civilian life in June and plans to work at Bethlehem Steel in construction steel sales. . . . **John Costello** wrote that he married the former Laurene Smith from Laurel, Mont., last November. They met at Ft. Knox, Ky., where John is serving his two-year tour with the Army. By now he should be working at the Badger Co., Inc. (engineering consultants and constructors in the chemical process industries). He worked with Badger for about eight months after graduation from M.I.T. and before he entered the Army. . . . **Jan Hyde** wrote to say that he is snowed under at the Harvard Business School. He also asked if I could arrange to send him some Hawaiian weather—too bad I can't fill his request.—**Jerry Katell,** Secretary, 2819 Pacific Heights Road, Honolulu, Hawaii 96813.

'64

A good bit of the news given by **Bob Scott** and **Bob Sanders** had to be cut from last month's issue due to space problems, so the rest is now enclosed along with information contributed by **Jerry Luebbers,** our class vice-president. Jerry, by the way, is keeping himself quite busy at the Harvard Business School. . . . **Warren Lang** is studying English at the University of Indiana. . . . **Richard Levine** is teaching before going on for more graduate work. . . . **Michael Lysaght** is a teaching fellow in chemical engineering at M.I.T. and is also doing graduate work. . . . **Dick McEntire** is in physics at the University of Minnesota. . . . **Stan McKenzie** has a National Defense Act Scholarship and is doing graduate work in English at Rochester. . . . **Jeffrey Michel** is at Tulane in electrical engineering. . . . **Mike Morrisey** is married and works for IBM in New York. . . . **Mel Oliven** is also married and is studying physics at Iowa. . . . **Pete Ordshook** is **Stan McKenzie's** roommate at Rochester. . . . **Bob Popadic** is at the Harvard Business School and is living with **Steve Miller,** who is at M.I.T. in electrical engineering. . . . **Micky Rainier** is at M.I.T. in electrical engineering and a tutor in Burton House. . . . **Gary Rauch** is at Illinois in Metallurgy. . . . **Chris Ritz** is enjoying the sunshine at the University of Hawaii. . . . **Dave Saul,** a graduate student in aeronautics and astronautics at M.I.T., lives in Arlington with **Bob Kimmel** and **Bob Scott,** where a bed is always available for weary travelers. . . . **Ed Shibata** is at M.I.T. in physics. . . . **Buzz Staubin** is at Pennsylvania Law School. . . . **Wayne Stern** is preparing to enter medical school next year. . . . **Bruce Strauss** is married and he and Judi are expecting an addition to their family this spring. Both Strausses are graduate students at M.I.T.—Bruce is in metallurgy and Judi in political science. . . . **Len Theran** is at Stanford Business School. . . . **Bob Thurber** is married and is studying electrical engineering at Penn. . . . **Carl Urmacher** is married and goes to Illinois. He will be back at M.I.T. next year in the chemistry department. . . . **Gary Walpert** is at M.I.T. in electrical engineering.

Don Beck is writing his Course XXI thesis for his S.B. . . . **Tom Cerny** is at Stanford Business School. . . . **Ron Chorba** is in graduate school at M.I.T. in M.E. . . . **Bill Dreiss** is at Harvard Business School. . . . **Jim Early** is at Caltech. . . . **Jason Fane** is at the Harvard Business School. . . . **Paul Fehder** is at Caltech and rooming with Jim Early. . . . **Neal Harvey** is rooming with Ron Chorba and is in M.E. at M.I.T. . . . **Ken Jacobs** is the third roommate of the boys at Cal Tech. . . . **Bill Julitz** is working for Motorola in Arizona and is doing graduate studies at Arizona State University. . . . **Leon Katz** is programming and going to night school at the University of Chicago. . . . **Paul Kwong** is at the Harvard Business School. . . . **John Ludutsky** is also at the Business School. . . . **Geoff Nelson** was married in August, 1964, and is at the Stanford Business School. . . . **John Nesholm** is in his fifth year of architecture at M.I.T. . . . **Bob Papadic** is at Harvard Business School, as is **Ron Randall.** . . . **Phil Stockhausen** is in graduate school at M.I.T. in C.E. . . . **Dennis Walstad** is working for Motorola and going to night school at the University of Chicago.—**Ron Gilman,** Secretary, Dane Hall 204, Cambridge, Mass.

Sloan Fellows

Russell Barnes, '64, has been made operations manager of Pan American's Guided Missiles Range Division. Since his return from M.I.T., he has headed Pan American's Data Processing Operations. Eastman Kodak Company announced the appointment of **Kenneth C. Kennard, '64,** as assistant head of the emulsion research division of the Research Laboratories. Prior to this appointment he was a research associate. **Victor J. Lombardi, Jr., '58,** has been promoted to president of Burl-Craft Knotters, 1290 Avenue of the Americas, New York. The company is a subsidiary of Scott and Williams, Laconia, N.H., where Mr. Lombardi was formerly assistant to the president. . . . A new military airplane division of the Boeing Airplane Company will be headed by **T. A. Wilson, '53,** as vice-president—general manager. Most recently Wilson has been serving as corporate vice-president: operations and planning.

Richard M. Osgood, Senior Executive, Fall 1959, has been appointed vice-president and general manager of the semiconductor division, electronic components group of the Sylvania Electric Products, Inc.

Edward R. Kinsley, Sloan, '59, has become president of Electric Reduction Company of Canada in Toronto, stepping up from the vice presidency. E.R.-C.O. is a long established Canadian chemical company that produces a range of chemicals largely based on phosphates and sodium chlorate. Its British parent company is Albright and Wilson, Ltd. Previously Kinsley was with Texas Instruments in Canada and later in the company's divisions in India, Pakistan and Britain. He was a Sloan Fellow in the class of 1958-1959. **Frederic D. Randall,** Sloan Fellow, '54, has returned to the home office of Eli Lilly and Company in Indianapolis, Ind., as administrative assistant to the vice-president, marketing planning. Previously he was with the company in Liverpool, England.

Club News

The Club Meeting Calendar

City	Date	Speakers	Secretary
Miami	April 1	Peter S. Eagleson	Irving Steinhardt, '48
New Haven	April 2	Robert R. Shrock	Suren A. Semonian, '50
Toronto	April 9	Walter A. Rosenblith	Michael M. Koerner, '49
Worcester	April 14	William H. Dennen	Arnold A. Kramer, '52
Bridgeport	April 20	Halsey C. Herreshoff	George A. Bradley, '52
Honolulu	April 20	Willam Seifert	Franklin Y. K. Sunn, '52
New York	April 20	Mechanical Engineering Meeting	James N. Phinney

Winter Meeting a Success In New Mexico

The M.I.T. Club of New Mexico held its annual winter meeting at the Albuquerque City Club on January 29. Present were 33 members, wives, and guests. President Fred Magee, '48, gave the invocation and, after dinner, attendees sketched the high points of their lives since leaving the Institute, with Fred Alexander, '32, introducing them. It is amazing what diversified lives we have all led! George Bradley, '49, acted as master of ceremonies and, in conjunction with Dave Caskey, '63, formed the general committee for the affair. Dancing afterwards was enjoyed by all. Those present were: Mr. and Mrs. F. C. Alexander, '32; Mr. and Mrs. Carter Bennett, '42; Mr. and Mrs. George H. Bradley, '49; Mr. and Mrs. Billy Caskey, '56; Mr. and Mrs. Dave Caskey, '63; Mr. and Mrs. Marvin Causey, '50; Mr. John Freeman, '64 and guest, Miss Margaret Koch; Mr. Scott Graham, '65; Mr. and Mrs. Fred Magee, '48; Mr. and Mrs. John Mattson, '52; Mr. and Mrs. W. R. Perret, '30; Mr. and Mrs. Ben Powell, '23; Mr. Robert Quinlan, '30; Mr. and Mrs. Tim Raftery, '31; Mr. and Mrs. Bob Riley, '54; and Captain and Mrs. E. A. Saville, '60, with their guests, Mr. and Mrs. Frank Marinaro and Captain Jim Fitzgerald.

The M.I.T. Club of New Mexico lost a distinguished and honored member by the death of Alfred Manchester Perkins, '23. Don Alfredo gained international recognition and reputation by his outstanding artistry in the carving and preparation of miniature figures of historic characters. The collection he created over the years is worthy of any museum. —T. J. Raftery, '31, Secretary-Treasurer, 1915-B Alvarado Drive, N.E., Albuquerque, N.M.

Luncheon Meetings Organized in Washington

At a dinner meeting on January 26, Harold S. Mickley, '46, Director of the M.I.T. Center for Advanced Engineering Study, discussed the effects of the knowledge explosion, the need for the professional engineer to continue his education throughout his career, and the activities of the Center set up to aid him. About 65 alumni attended. One visitor, Jack Stearns of the Jet Propulsion Laboratory, came all the way from California.

The M.I.T. Concert Band performed at the University of Maryland Colliseum on February 5, to an appreciative audience of alumni and guests.

A downtown Washington luncheon group has been organized. Its first meeting was to be held on February 10 at the Brookings Institution. Major General Don Ostrander, who directs the U.S.A.F.'s basic research program, has agreed to address the group on the second Wednesday in April. William Green is interim membership chairman. Interested alumni are invited to participate.—J. J. Phillips, Jr., '38, Publicity Chairman, 3603 Fulton Street, N.W., Washington, D.C.

Hawaiians Welcome Alunni Teaching There

New members in this club area include Robert S. Burdick, '44, and Dr. Nathan Burbank, '55. Robert S. Burdick, retired from Naval service in 1959, is currently teaching mathematics at the Hawaii School for Girls. Dr. Burbank is now professor of Environmental Health and Sanitary Engineering at the University of Hawaii.—Franklin Y. K. Sunn, '52, Secretary, 195 S. King Street, Honolulu, Hawaii 96813.

Preservation of Architecture Interests Indiana Group

Thirty-six Indiana alumni, alumnae and their families gathered at the Marott Hotel on February 4, to hear Roll McLaughlin tell of "Making a Future for the Past." Mr. McLaughlin is an architect colleague of our Tom Dorste, '47, who invited him to speak for us and then had to be out of town on business.

The speaker told us how worthwhile examples of good architecture are being preserved and restored throughout the country. He showed us slides and movie film and the audience was entranced.

In attendance were the following M.I.T. people: H. S. Adams, '30; John Babbitt, '17; H. J. Brown, '30; Fedia Charvat, '56; Frank Burley, '30; R. E. de Raismes, '37; Thomas Dowling '26; Eugenia Dritsas, '25; Eleanor Dorste, '47; Fred Fay, '32; Homer Fay, '53; Thomas Harvey, '28; Charles Herbert, '51; Paul Hotte, '42; Marshall McCuen, '40; J. R. Ramsey, '17; Archie Tower, '44; Frank Travers, '23; John Welch, '13; James Wootton, '49.

Plans for a summer picnic and a fall meeting are under study by your officers in Indianapolis, and interested alumni will be notified of meetings.—Thomas G. Harvey, '28, Secretary-Treasurer, 5685 North Delaware Street, Indianapolis, Ind. 46220.

Institute Expansion Discussed in Kansas City

On Tuesday evening, January 19, the M.I.T. Club of Kansas City was graced with the presence of Donald F. Carpenter, '22, President of the Alumni Association. Twenty-one alumni and their wives were present for cocktails and dinner at the Harvey House. President Bernard Duffy, '44, presided. Mr. Carpenter spoke of the continual and tremendous changes being wrought, physically and educationally, at the Institute. Though several of the group have made periodic returns to Cambridge it is always amazing to hear of the many changes. Particularly interesting to the group, and causing much discussion, were the comments by Mr. Carpenter on the changes in curricula and in the control and advice exerted by the Visiting Committees.

Among those present was Ward Haas, '45, the Director of the Space Research Center of the University of Missouri at Columbia. Although this part of Missouri is not within the Kansas City Club's territory we were pleased to have Dr. Haas and his fine wife present to hear Mr. Carpenter.

We of the M.I.T. Club of Kansas City have been particularly saddened by the recent passing of our club secretary, Peter Bulkley, '55. After several years in other climes, Pete joined us about two years ago when he joined the staff of T.W.A. He played a key role in their equipment expansion program. It was leukemia which struck down Pete, after he had been hospitalized in the Boston area.—B. J. Kirkwood, '49, Vice-President, 4308 West 79th Street, Prairie Village, Kansas.

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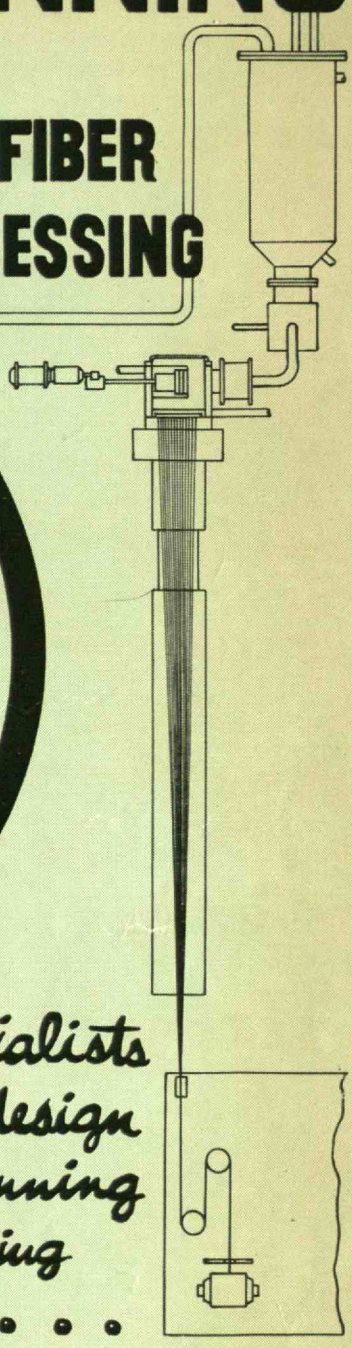

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